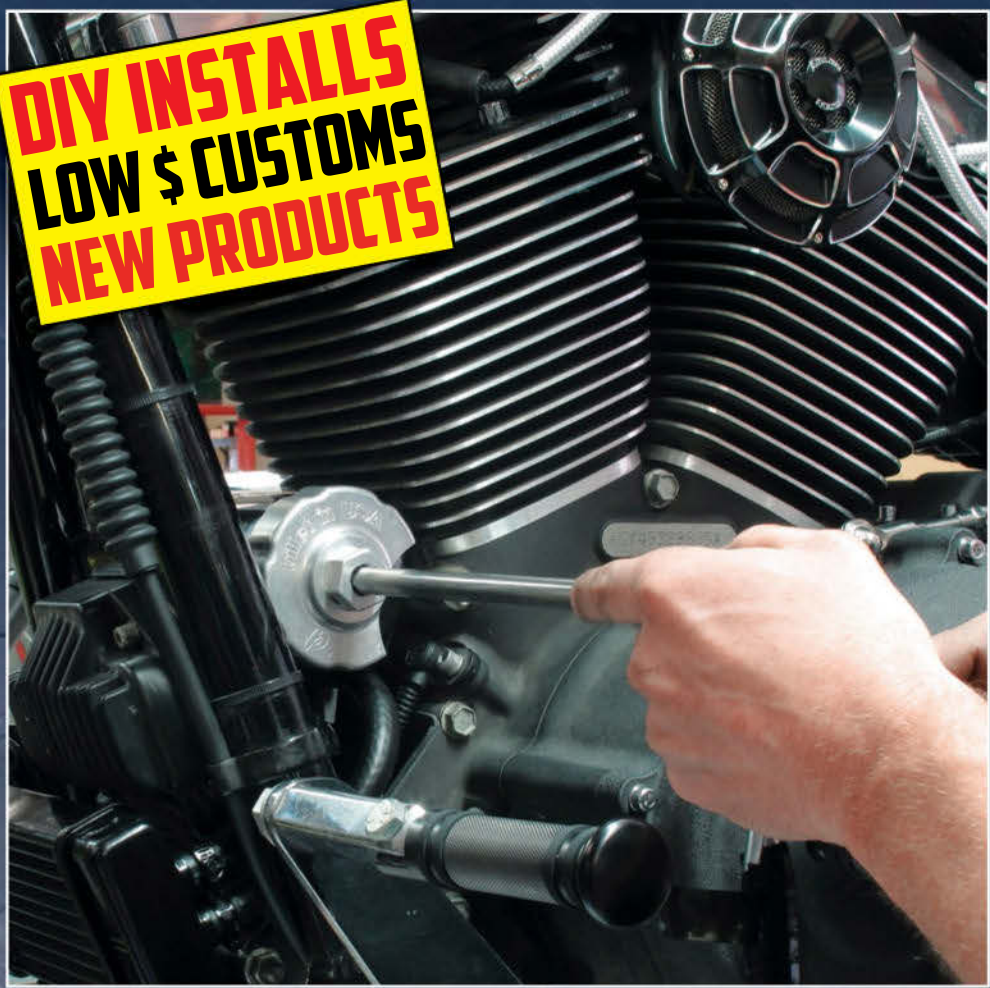


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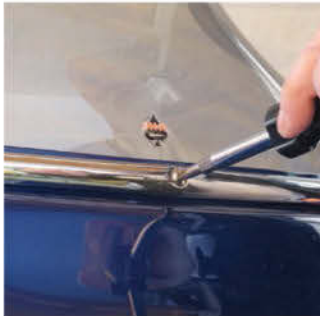


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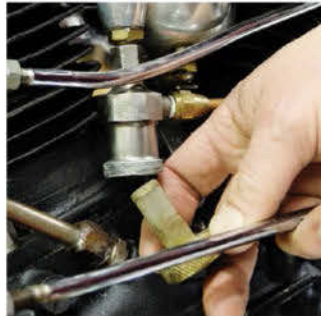
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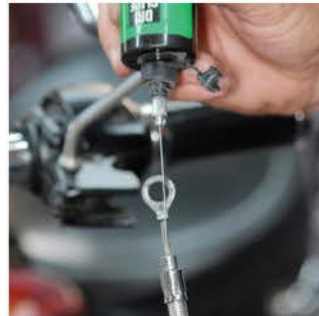
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Motorcycle courtesy of CrossRoads Harley-Davidson®



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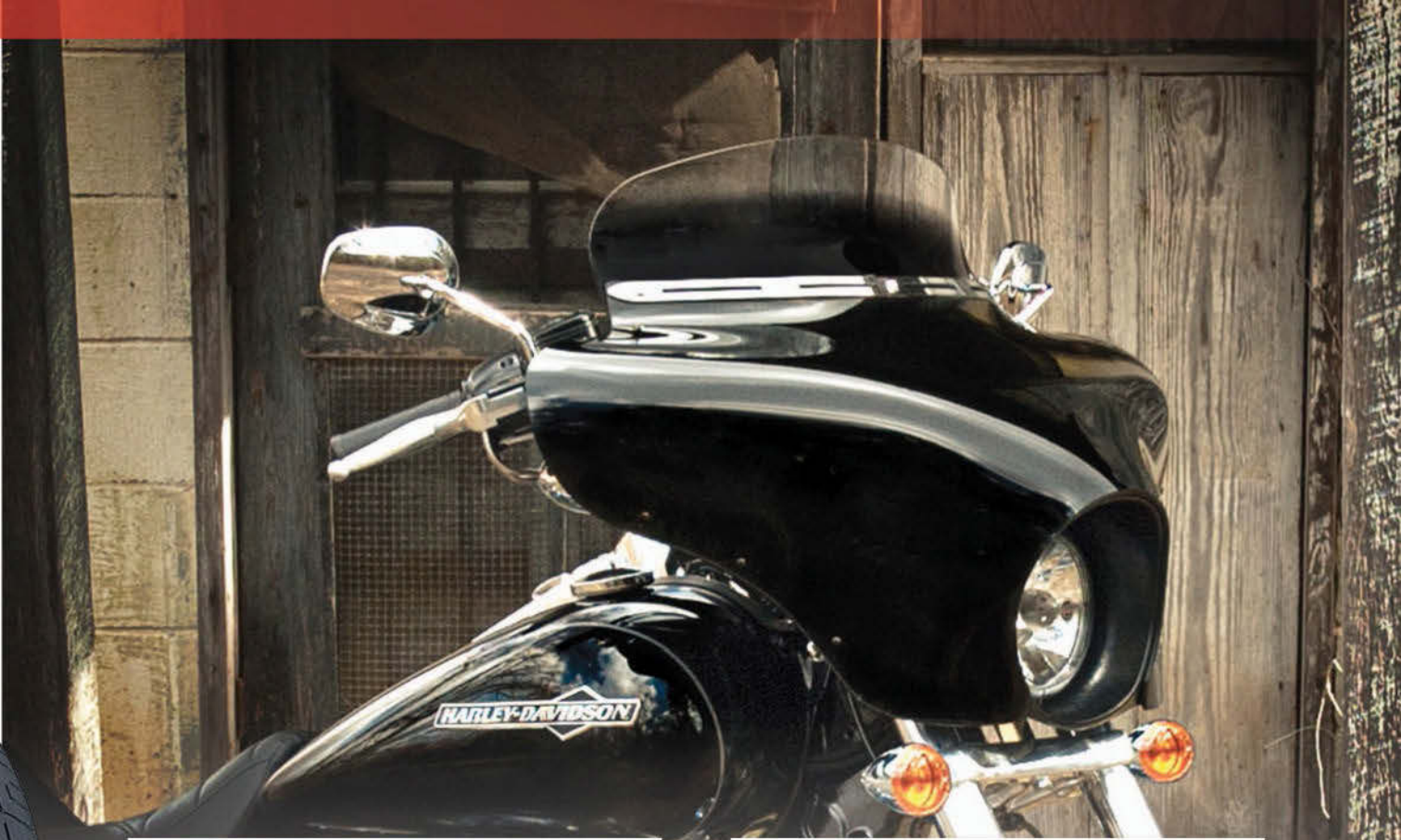
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NOBODY MAKES THAT

MY EDITORIAL RANT FOR THIS ISSUE MAY OFFEND some in the motorcycle/automotive parts biz. But that's okay, I did more than stay in a Holiday Inn Express last night; I worked in the parts store biz long enough. Fresh out of high school I went to work as a parts counter guy. We called them parts counter guys back then, not parts counter person. I think even the want ads were printed that way. One fancy European car dealership tried to tell me I was a "Specifier Expediter" (you specify what you need, and I get it for you), but I wasn't falling for that. I was cool with Parts Guy, and not to pat myself on the back, I thought I was pretty good at it.

Muscle car restoration guys used to line up to wait for me to look up their motor-part minutia. This was back when parts guys were manly men and used real parts books. You remember those. They came before parts microfiche, which was before computerized inventory, which was before online parts tracking, but sometime after when parts lists were chiseled into rocks with stone implements, caveman style.

Back to my rant, why is it that I feel more confident walking into Mohegan Sun Casino and throwing all my money on 14 Red on the roulette table and closing my eyes when the wheel spins than I do when I order parts either through my local brick-and-mortar parts store or even online? I know vehicles are more complex now than ever (see Mark Zimmerman's column on the next page), but it shouldn't be that hard.

I remember one motorcycle trip I was on with a guy who was riding a modified bike. He was fouling plugs, and we needed to find a quick fix for the bike. With not a motorcycle shop in sight, we went to the local mass-marketing-franchise auto parts mega-market. Surely it would have a spark plug that would work. But all we got from the parts pros behind the counter was "make, year, and model, Sir". His head almost imploded when we told him we were working on a

motorcycle and not a car. "Sorry mister, we only have parts for cars here." I let the bike owner deal with the situation for as long as I could stand (which was about 28 seconds) before I burst in and took over. "Gimme the NGK book, please" I blurted out. He said "The what?" I said "The parts book, you know, the paper NGK parts catalog with the pretty yellow and orange colors on the cover." He said he wasn't sure if he had one, but under the counter was a stack of old books he could look through and see. He disappeared for a moment and emerged with a dog-eared, page-curved, four-year-old catalog, and of course, he had to hold it up to his face and blow the dust from it for dramatic purposes. From the puff of

dust billowing through the air you would have thought we were in the library asking for the original copy of *War & Peace*.

I immediately turned to the back and found the tech spec pages. Through its ingenious part numbering system I could literally design the part number by selecting spark plug thread, hex size, reach, depth, and heat range. Everyone in the place, including the "make, year, and model" parts guy were looking at me like I was a sorcerer conjuring black magic from a book of spells. Presto! Here's the number we need! The classic ending to that tale was when, as he handed us our spark plug, the parts person (he's not a parts guy) told me he never knew there was a chart like that, in the book that he never used, nor knew he had access to.

Don't get me wrong, I'm not hating, merely venting. The unfortunate thing these days is it seems like that profession has a revolving door for folks walking into and out of that job. You can tell

which parts guys know their stuff and which don't. You can also tell modern parts web sites are not developed to be user-friendly. My advice? Find the right parts guy and show him some love with a round of coffee, or better yet, a six pack around the holidays, and you will have a friend for life who will go to the ends of the earth (or at least the end of the counter) to get you the right stuff.



I was a sorcerer conjuring black magic from a book of spells. Presto!

Steve Lita
Editor

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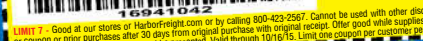
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ROCKET SCIENCE?

I RECENTLY FOUND MYSELF WASTING TIME IN A local motorcycle shop. After a few minutes of pleasant chit chat discussing this, that, and the other thing about the current crop of motorcycles, one of the pimply-faced techs who seems to come and go on a monthly basis at this particular shop began to tell me how smart he is, and how no one, besides himself, knows how to properly service and tune the latest and greatest motorcycles. “It’s not like when you old timers were working on bikes. Nowadays, you really have to be a rocket scientist to keep these things on the road.”

My response was measured. “Listen up, you little \$#!+. I’ve worked with real rocket scientists before [more accurately aeronautical engineers], and you aren’t one of them. Yeah, new bikes can be complicated, but they’re only as complicated as you make them, and from what I’ve seen, you make them way too complicated because it’s the only way you can justify taking two hours to change a tire or charging the customer 90 bucks labor to change his oil and filter.” Figuring I’d probably overstayed my welcome at that point, I headed for the door.

Nevertheless, the conversation got me thinking. Has working on motorcycles really become as complicated as that little twerp suggested? In the interest of full disclosure, I’ll admit it’s been over 35 years since I’ve spun a wrench in a motorcycle shop, so never would I suggest that I’m as up to speed as any decent line mechanic when it comes to repairing state-of-the-art motorcycles, but I haven’t been living in a cave, either. In the intervening years, I’ve been studying, thinking, and writing about motorcycles and, in particular, their technology, on a daily basis. As my ever-loving wife once pointed out, motorcycles are the last thing I think of at night and the first thing I think of when I wake up. Actually, that’s not 100 percent accurate, but it’s close enough for our purposes.

There’s no doubt that some of the new models have become inordinately complex. When I cut my teeth, a lot of motorcycles still had magnetos, and things like electric starters and turn signals were still something of a novelty. Reliable electronic ignitions were still almost a decade away as was the O-ring drive chain. As far as EFI/ABS and all the rest of it? Those were a gleam in some young engineer’s eye.

Today, standard equipment on many bikes includes fly-by-wire throttles, on-board entertainment and navigation systems — with cellphone access at the push of a button — not to mention things like bank-sensitive traction/slide control, interactive ECU-controlled suspension, and wheelie and launch control. Cutting-edge bikes are so good that it boggles my mind. And, yes, it goes without saying that when something goes south, it can be a lot harder to fix than the 1966 BSA gathering dust in my garage.

But here’s the interesting part: no matter how complicated the new bikes have become beneath the seat, they’re still motorcycles, and riding a motorcycle, as we all know, hardly requires a degree in anything, let alone rocket science. In fact, some of the best riders I’ve ever encountered, including some top-flight racers, couldn’t provide a coherent explanation of something as simple as how an internal combustion engine actually works if their lives depended on it. For all they know, or care, there could have been seven little dwarfs in there turning that crankshaft. As long as the thing runs, they’re happy.

Perhaps more importantly, any mechanical device, no matter how sophisticated, is merely an assemblage of easy-to-understand components. It doesn’t matter if we’re discussing the space shuttle or a moped, once the device is reduced to its foundation parts, which in every case is a single fabricated piece, anyone who can read these words can understand how it works.

So while it does take some esoteric knowledge to troubleshoot at the component level, that doesn’t mean you have to have a degree in rocket science to maintain, accessorize, or, in most instances, repair your motorcycle. In fact, I’d argue just the opposite: with a shop manual, a few bucks worth of tools, and the will to do it, anyone capable of riding a bike should be able to maintain it. Like I said, it ain’t rocket science. **AIG**



Has working on motorcycles really become as complicated as that little twerp suggested?



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LETTERS FROM YOUR GARAGE

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TRIKE CONVERSION My build is based on a 2007 Harley-Davidson FXSTC Softail Custom. The bike was bought new in 2007, and I started the trike conversion in 2010 after my doctors told me about the arthritis in my knees and lower back, which would make it more difficult to hold the bike up. The trike conversion is from Mystery Designs in Dallas. Other than the kit, I first added a Xtreme Machine front wheel, Harley windshield, and a Corbin trunkrest. Since then, I've installed a batwing fairing, Corbin seat, Feuling 574 cams, plus other goodies. Just recently, I installed an EFM Auto Clutch coupled with a Pingel shifter.

PAUL SHOTTER
West Babylon, NY

We welcome letters on any subject, whether we agree with the writers or not. Electronic letters, both with and without photos, can be e-mailed to Garage@AmericanIronMag.com. Photos should be high-resolution, JPEG images (at least 300 dpi at 4" x 6"). Please also include your name, address, and a brief description of each photo. And although we reserve the right to edit, shorten, or change your letters so they make no sense at all, we do promise not to mess with your images. That means no phony mustaches, tutus, etc. (However, we may slip an issue of *American Iron Garage* into the photo somewhere.)

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BUILDING SINCE 1979 I bought my 1956 FLH in 1973, the year I graduated from high school. It was Canary Yellow with a 24"-over springer and a huge rake. I had some work done on the neck, and I cut 12" off the springer, painted it red, and rode it like that until 1979. I took it apart in '79, but with marriage and kids, it sat in boxes until 2013. We added all the frame tabs back on it and rebuilt the motor and transmission using new parts. I sourced parts from swap meets and V-Twin Manufacturing to get it back on the road. I wish I could tell you that it's

original, but I can't. It runs like a sewing machine, and I have about 350 miles on it so far. I planned on taking it on your 2013 Kickstart Classic ride in Charleston, South Carolina, but it still wasn't ready, so I rode my 1980 FXWG. I had a great time riding with Buzz to Savannah, Georgia, and then St. Augustine, Florida.

JAY COOMBE SR.
Clyo, GA



FRESH ALL OVER My 2010 Heritage Softail was finished a week ago so it's fresh all over. It has air-ride suspension, 107" engine upgrade, and a 21" Ridewright front wheel with a matching rear. There are Harley chrome upgrades throughout the entire bike, too. The paint was done by Alvey Body Worx, and the custom seat was done by Sewn Tight Custom Interiors.

SHANE LILE
Shepherdsville, KY

1972-2010 BUILD I bought my XLCH Sportster as a stock machine in the summer of 1973. I rode it until Thanksgiving that year and then did the first teardown. I started by painting the frame and then did a top end rebuild. Chrome and paint were next. About two years later, I started a second teardown, which created a much more comfortable ride, a better looking ride, too. I sold the Sportster to my cousin Mike Irwin in 1984. He melted a piston late in 1987 due to bad gas, and the bike sat for the next 18 years. Unfortunately, Mike died on November 10, 2005. My brother-in-law and other relatives crated it up and shipped it to me in 2006. I took it completely apart once again and cleaned and fixed stuff. The winter of 2007-8 brought another teardown, and the winter of 2008-9 was more of a nut and bolt detailing phase. The following year brought a new paint job on the tank, this time with Candy Red flames (hand-pinstriped by yours truly).

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LIKE AN OLD JOHN

DEERE I purchased my 1950 Panhead in California at a swap meet as a rolling chassis that was purple with flames. It had no wiring, didn't run, and was pieced together to sell. What it did have was good bones: '56 straight leg



frame, '48 tranny, '53 springer, OEM gas tanks, good numbers, and a '50 engine. I stripped it down to bare metal and rebuilt the entire bike. The only thing I didn't rebuild myself was the engine, which I sent to Carl's Cycle Supply in South Dakota. Carl's rebuilt the engine back to OEM, complete with a Linkert carb. My intent was to build a reliable bobber with handshift/foot clutch and keep the heart of it OEM. It sports mechanical brake drums, star hub wheels, updated clutch and belt, and it was painted and rebuilt in my garage. It starts on the first kick and rides straight and true. Kinda like an old John Deere!

TOMMY GOODE

Via Internet

FIRST BUILD It all started with a stock 2002 Sportster XL1200C with low miles. I stripped it down, cut it up, and sent it off to Led Sled Customs for a hardtail conversion. I also bought a few other parts from Led Sled. I found a great fabricator and painter but did all of the other work myself. When I ran into some snags, I had a good friend mentor me through it. Fast and light. I think she came out pretty good for my first build.

MARK PULEO

Valencia, CA



COMPLETE TEARDOWN I did a complete tear-down with my 1995 Fat Boy. It has new custom fenders, tank, bars, controls, and sissybar. I built the 80" Evo by boring it 0.060"-over. It has Keith Black pistons, Andrews cam, Crane Cams ignition, and S&S Cycle Super E carb with Zipper's ThunderJet. The exhaust, fender struts, skull headlight, signals, and headlight backing have been powdercoated gloss black. I built this bike with my children in about three months on the floor of my garage with nothing but a jack and hand tools.

JUSTIN FORTNER

Wilmington, DE AIG

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Hard Corps

Editor's Choice Bike Show Winner

A COUPLE OF YEARS AGO, BRETT DEAN (aka “Gunny”) found a 2006 Kraft/Tech rigid frame at a swap meet. Bonus: the thing had a MSO, too. The deal was too good to pass up for Gunny, so it followed him home. That’s when the wheels started to turn upstairs. Gunny is a pretty good wrench and he has experience with a lot of other machines (hey, he even met his significant other, Tammy, while cruising the main drag on his then-near-new 650 BSA way back when in the ’70s). As a result, he figured he could pull off the build, plus it was a great way to unwind after a day at the lab.

You see, Gunny is a retired US Marine Corps (USMC) Gunnery sergeant. He spent over two decades in the serv-



ice, and when he finally pulled the pin, he decided to make use of his hard-earned benefits. To make a long story short, Gunny earned multiple degrees, and he’s now doing research work for Embry-Riddle Aeronautical University. In addition, he’s also the meteorology lab manager. Talk about being an inspiration for other folks, but I digress — back to the build.

The plan came together when Gunny located a 113" S&S Cycle Big Twin engine. Quickly following that score was another: he located a rebuilt Harley-Davidson five-speed gearbox filled with an Andrews close-ratio gearset. Gunny stripped the S&S twin and went through it while his buddy Paul Ronan helped with the blueprint job. Gunny points out that Paul was his go-to guy when it came to double-checking fine details on the entire build, and he’s certainly appreciative of the help. Internally, the Big Twin includes a



set of 0.10"-over, 10:1 compression ratio S&S pistons. The flywheels are stock S&S pieces while the camshaft setup is a Zipper's Red Shift 656. This Red Shift package has a honking 0.648" intake and exhaust lift while the duration measures 258 degrees. The cylinder heads were also reworked by the folks at Zipper's. The Evo heads feature some Stage III port work with 1.90" intake and 1.63" exhaust valves. The rockers and lifters are from JIMS, while the pushrods are from the Zipper's shelves. Downstairs, the Evo includes an oil pump from JIMS. Fuel is delivered by a S&S Super G carburetor while the spark is provided by a COMPU-FIRE HDE-3 digital electronic ignition setup. The plug wires are from ACCEL and so is the charging system. The pipes are from the folks at Rush.

Backing the rumbling S&S Evo is an open 3" belt drive from BDL. As mentioned above, it's hooked to an

Andrews-equipped five-speed Harley-Davidson gearbox. The final drive is a chain setup. Gunny tells us the bike runs a 19-tooth front sprocket and a 52-tooth rear. The Kraft/Tech rigid frame he purchased at a swap meet is set up for a 200-series back tire. And that's what Gunny uses. The back skin is a 16" Avon while the front is a traditional 21" setup. The back wheel is made up of hand-laced pieces based on V-Twin Manufacturing parts while the front is a relaced Harley-Davidson item. The frame has a 4" stretch while the rake is 38 degrees. The fork is a modified 41mm Harley-Davidson piece. The front and rear brakes are four-piston jobs from RevTech.

Up top, the handlebars are 18" apes from Burly Brand, mounted to 2" risers. The hand and foot controls are right out of the J&P Cycles catalog. So are the levers. The same with the mirror: it's a J&P Maltese job with a black



Air-Glide stem. The seat is a custom-sprung part from Badbones Leatherworks.

As far as tin is concerned, Gunny added a 6-gallon flat-side tank and a back fender he liberated from a trailer. The oil bag is a Softail piece. Meanwhile, the front fender is also a production line Harley-Davidson job. If you look closely, you'll see the dash is



trimmed in checker-plate aluminum. Ditto with the seat mount. To get there, Gunny actually cannibalized an old toolbox from his pickup truck for the checker plate. It works out great, particularly when powdercoated. Speaking of powdercoating, pretty much the entire machine has been powdercoated, except for the gas tank and the back fender. Powdercoating was applied by Allen's Custom Powder Coating in Palm Coast, Florida. The paint is something else that was outsourced. Aerial Fine Art (also from Palm Coast) handled the work. As you can see, the entire scheme is "on fire." There isn't a single piece of sheet metal without flames! And as you can also see, there's no chrome to speak of on the machine. That was the plan. When it came to the actual color scheme, Gunny tells us that he was torn between Harley-Davidson's black and orange race colors or the USMC scarlet and gold battle colors. He eventually went with the Harley-Davidson scheme, but when you scan the accompanying photos, you'll find Gunny pays tribute to the Marine Corps in several locations on the bike.

I asked Gunny if there were any troublesome spots in the build. He figures he didn't run into many problems aside from scheduling. As it turns out, the frame is what came from the powdercoater last. It should have been first. And because of that, the final assembly process was actually delayed for something like nine months. Maybe that was good news, too, because he never really rushed assembling the machine. The truth is the journey is part of the fun.

Gunny finished the machine in time to shake it down and shortly after enter it in several shows. (He has the show gold to prove it, too.) But the biggest event win, at least as far as we're concerned, has to be the Editor's Choice Bike Show award at the Broken Spoke Saloon in Daytona.

Editor Steve Lita picked Gunny's Hard Corps machine as one of the winners during this year's Daytona Bike Week. As Steve points out, it's a unique show: roughly a dozen magazine editors are invited, and they all look the bikes over. They then select their favorites. Those selections then get tossed in a pool of sorts. In the afternoon, the editors "duke it out" to decide who gets which bike. No real fisticuffs involved, but if two editors want the same bike, then the situation needs to be resolved. Steve usually picks his three favorite rides, and as the afternoon selection process moves on, he works with the other editors to get one of his picks. This year, Gunny's bike was his top choice. Yee-haw!

But what about the ride? It rolls down the highway nicely, thank you. Gunny rides the thing as much as possible. In fact, it's pretty much his daily rider back and forth to Embury-Riddle. Folks dig it. Obviously we do, too! Ride on, Gunny! **AIG**



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The Big Boys

Jacks, lifts, and stands

IN THE PAST ISSUES OF AMERICAN IRON GARAGE, WE'VE shared and discussed various hand tools that we feel will improve any hands-on projects you plan on doing to your Harley. While these tools are great for wrenching, torquing, screwing, bolting, and everything else in between, the most meticulous do-it-yourselfer needs to have some larger tools at his disposal to more aptly deal with moving his iron steed. Sometimes you have to elevate the front end of your bike so you can replace your wheel or tire or, perhaps, you need to lift the entire bike off your garage floor to get at it from below (and, no, you're not the Hulk, so we wouldn't recommend doing the ol' lean-over-hoist-

and-lift maneuver). And for those smart enough to realize when some mods are beyond their skill level, they'll need a mechanism that will get their bike safely onto some form of transport to bring it to a certified mechanic. So for this issue's buyers guide, we're stepping it up by including a list of the big boys, which we believe every handyman should at least consider and hopefully look into adding to his garage inventory.

Shark Kage 24" Ramp

Made with a wider ramp, the Shark Kage 24" (#SK24/\$299) lets you place your feet safely down while on the bike when loading and unloading, and its traction struts prevent slippage when walking up the ramp. The ramp's shark-bite mounting plate keeps it stable so it won't fall underneath you. The Shark Kage 24" is made with heavy-duty aircraft grade aluminum, features a weight capacity of 800 pounds, and measures 24" wide x 92" long. Similar to the original Shark Kage, the 24" model transforms from ramp to bed extender and can be altered into a work bench. Weighing less than its processor at 50 pounds, users can fold and unfold the ramp more easily. Info: Shark Kage, 702/982-1400, SharkKage.com.



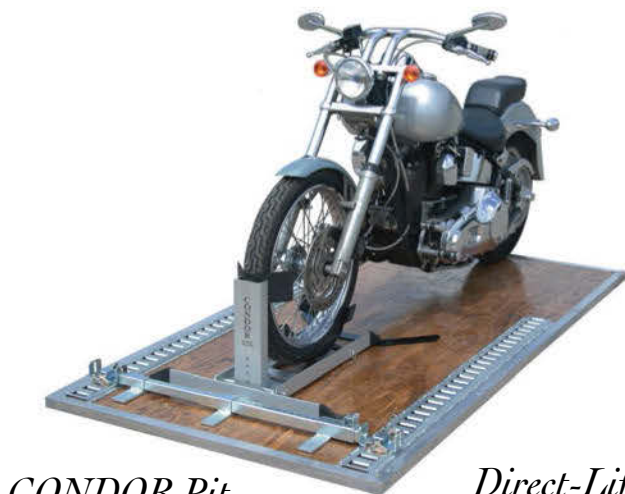
Titan 1000D Lift Table

The Titan 1000D (#SDML-1000D-FX-B), a heavy-duty, diamond-plated, air-powered lift table, has a 1,000-pound lifting capacity and an extra-long working table that features 99" of work space. With a 35" working height, the 1000D includes front wheel vise, multipositional front table extension (three positions), standard rear wheel drop out, roller plate drop out, detachable ramp, and air-powered lift controls. The 1000D comes in two different powdercoating color schemes of black/gray or black/orange but doesn't include a stabilizer bar. Info: Titan Marketing LLC, 888/908-4826, TitanLifts.com.

Pit Bull Pit Crew Tire Wedge

The Pit Crew tire wedge (#F0102-000/\$64.95) is a height-adjustable device that allows one person to align and steady motorcycle wheels so axles can be removed and installed. Capable of being used with most Pit Bull front and rear stands, the Pit Crew attaches without hardware with a solid press fit. The height can be set between 3/4"-4.9" by twisting its adjust-

ment knob, which can be done with gloves on. Complete with a lifetime warranty, and designed and manufactured in the US, the Pit Crew is made from steel and is zinc-plated. Info: Pit Bull Products Inc., 256/533-1977, Pit-Bull.com.



CONDOR Pit Stop/Trailer Stop Wheel Chock

The Pit Stop/Trailer Stop wheel chock (#PS-1500/\$269.75) holds bikes securely upright. The patented adjustable cradle fits all bikes from cruisers to heavy touring bikes and anything in between, up to 3,000 pounds. The Pit Stop works on front and rear tires from 14" to 22" and from 80mm to 230mm. Made of lightweight aluminum, and weighing only 30 pounds, the Pit Stop/Trailer Stop folds down for easy storage. The chock is compatible with CONDOR's Trailer Adaptor Kit (#TK 3000), and if your trailer is equipped with E-Track, CONDOR designed a Universal E-Track Adaptor Kit (#UNIV-E-Track). However, if you're transporting your bike in the back of a pick-up truck, you don't even need an adaptor kit. Only two tie-down straps are required. Info: CONDOR, 800/461-1344, Store.Condor-Lift.com.

Direct-Lift ProCycle

The ProCycle motorcycle lift (\$645) has a 93" table, a 20" approach ramp, and is air-operated (90-100 PSI). With a weight capacity of 1,000 pounds, the ProCycle has a diamond-plate surface and comes with a vise. The 24"-wide lift when fully lowered is 7-1/4"-high and when fully risen is 33". The ProCycle is powdercoated black. Info: Direct-Lift, 866/347-5438, DirectLift.com



Baxley LA Chock

A secure, patented parking stand, the LA chock (\$259) can be adjusted to fit any motorcycle tire size. Just place the stand on the floor and push or ride the motorcycle into the stand, and the stand will clamp onto the front tire and securely hold the bike upright. Users can also mount the LA chock in a trailer. Once in the vehicle, you can get off the bike and secure it with straps yourself, with no front tie downs necessary. A smaller footprint LA trailer chock is also available. Info: Baxley Trailer Company Inc., 888/988-8833, BaxleyCompanies.com. **AIG**



Harbor Freight Tools ATV/Motorcycle Lift

This all-steel, 1,500-pound-capacity ATV/motorcycle lift (#61632/\$149.99), is hands-free, so you can position or stabilize your bike as needed. This motorcycle lift can be raised up to 16-3/8" high with the use of a foot pump. Complete with two 2-1/2" swivel casters, the motorcycle lift can be folded down to 4-3/4", and features four lockable work heights from 4-3/4" to 16-3/8". The lift's rubber grip pads on its lift saddle protect your motorcycle's frame, and its welded loops can be used with tie-downs. Info: Pittsburgh Automotive, 800/423-2567, HarborFreight.com.



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Out Of Hibernation

Getting back on the road

I'VE BEEN GETTING OLD BIKES BACK ON THE ROAD FOR years, and I'm often asked how I find these great bikes and what's involved in getting them roadworthy. The first question would take a book to properly answer, but here's basically what we recommend you do to get an old bike back on the road after a long hibernation.

I recently stumbled upon this 1930s Harley VL and sidecar rig that's been parked in a heated basement for more than 10 years. We brought it — basement fresh — over to Retrocycle in Boonton, New Jersey, to get it roadworthy. It arrived off the truck washed and waxed, with tires pumped up and a

freshly charged battery. After looking it over with Rob Nussbaum, Ryan Stalter, and VL expert John Cullere, we agreed it was a very cool bike, but far from 100 percent correct, which is fine with us. This bike was built in the pre-eBay era when original parts were hard to find and before today's choices of aftermarket and reproduction parts. Back then, most builders used whatever model and year



Here's how the bike and sidecar were delivered off the truck. It's nice that the seller washed and waxed it for us.



parts they could get to fit, and they used a lot more chrome plating than we do today.

Before you start, it's a good idea to set your goal for the bike. Ours was to get it running, sorted out, and dependable. We didn't want, nor was it practical, to make this anywhere near a 100-percent-correct show bike. Once we have it sorted and dependable, this old Harley flathead sidecar rig will head deep into a small New England village where it will be used as a grocery getter.

Initial Inspection

The first thing I do when I get my hands on an old bike that's been sitting for a few years (or more) is a comprehensive visual inspection. Take your time and walk around looking it over for clues to its history. How original and correct is it? Are there signs of animals having recently lived in or on it? What's



Before laying a tool on the machine, the first thing we did was carefully look it over. Keep an eye open for anything that looks wrong, is missing, or might need attention.



3 To make our job easier, we carefully removed the sidecar and blocked it up. Then we rolled the bike up on the lift to save our backs and knees when working on it.



4 The first thing we checked was that the engine kicked over without any major issues. We pulled out the spark plugs and had a look at them. (These were a bit oily, which is much better than dry ones or plugs that show corrosion.) This engine kicked over nicely, without any major noises and had decent compression. We then checked and reset the valves for proper play.

missing or just looks wrong? If you're planning on a 100-point bike for judging, you better have some solid reference books. If you want a rider, like this one, dependability is more important than factory-correct accuracy.

Powertrain

I usually start with the powertrain because, let's face it, if the engine is trashed, you have to decide if this particular project is worth your time and money.

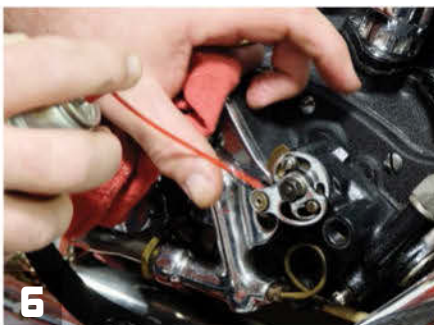
Engine: First pull the spark plugs and gently kick the engine over. Listen for strange noises from the piston, ring, or other cylinder issues. It's a good idea to give it a compression test — dry and wet (with a little oil squirted into the cylinders to help seal otherwise leaky rings).

If the engine turns over with no major issues, you'll want to drain the oil from the sump and see how it looks. Ideally, it should be honey-colored or black. White indicates moisture — not good. Metal shavings are never a good sign.

Transmission: Work it through the gears to see how it feels shifting. It might feel stiff if the bike has been sitting for a long time. Hopefully, the



5 The throttle didn't turn smoothly, so we removed the grip and rotating parts, cleaned and lubricated the internal throttle wire, and reassembled it. Much better — and safer!



6 While not an issue with most newer bikes (and most bikes are newer than this 1930s Harley), we didn't have an issue with the oil pump, but these old VLS have a separate cable that junctions off the throttle cable.

transmission will need little more than an oil change and possible flush. If not, repairs or replacement can get costly, and searching for old transmission parts can be tricky.

Clutch: Work the clutch in and out — either with your heel/toe rocker on older bikes or by the hand lever on newer ones. Like the transmission, it will probably be tough to engage if the clutch has been sitting for a long time. Old clutches plates tend to stick together. Oftentimes, they break loose with a bit of use.

Carburetor: If the bike has been sitting since before ethanol was introduced to America's gas supply, it might be in better shape. Ethanol has ruined more small engines and carburetors than most people realize.

The main issues with an old carburetor are usually related to floats that don't float and clogged jets. Check to make sure the float does in fact float (especially with today's ethanol gas). This is done when you fill the float bowl with fresh gas, and it doesn't overflow within a few minutes. If the float is okay, you might want to clean the jets and remove and clean out the external filter if there is one.



7 We checked the battery for charge, and it was in decent condition, so we wanted to see if the ignition made spark. We checked the condition, gap, and timing of the points. They were good, but there was an issue with grounding the points plate, which is unique to the old Harley VLS.



8 We resoldered the ground wire to the points plate. Then we got nice, big, fat sparks at the points and the spark plugs. Success!

You should clean or replace the old air cleaner if your bike has one.

Chain (Primary and Drive): Start with the primary chain. It should be snug, rust-free, and well-lubricated. Then check the drivechain, which should also be snug, rust-free, and well-lubricated. Check both chains to make sure they aren't stretched unevenly or kinked in any way. If in doubt, replace with new ones. Also check the sprockets to make sure they're true and not worn out.

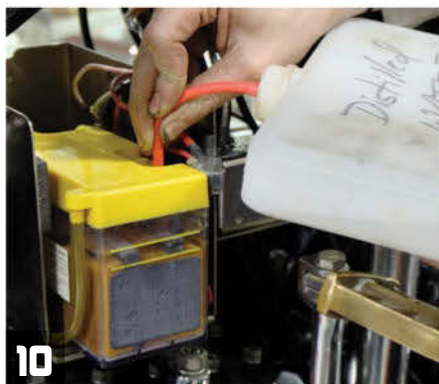
Wheels & Tires

Wheel spokes: First make sure both wheels have all the spokes they should have. Missing or broken spokes should be replaced before you ride the bike. It's easy to check your spokes for tightness by dinging them with a screwdriver or another metal rod. They should all be tight and sound about the same when dinging them. You can adjust the tension with a spoke wrench.

Wheels bearings: Because they're out of sight, wheel bearings tend to be ignored until they're a problem. Hopefully, yours will need little more than a possible cleaning and some fresh grease.



9
This Schebler carburetor has an external filter. We removed the filter, cleaned, inspected, and reassembled it.



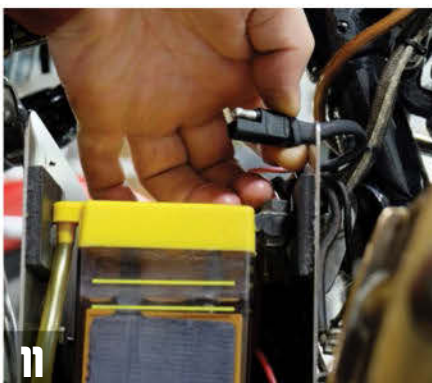
10
The battery was fairly new and in decent condition, so we didn't need to clean or replace it. We did top off the cells with distilled water.

If the bike rolls easily on the wheels, the bearings will probably be fine. If there's resistance or an uneven roll, inspect and replace or repack them in fresh grease.

Wheel rim: Your wheel is either straight and true or it isn't. If not, it's either because the spokes need to be adjusted or the rim is bent. Bent rims are a pain to replace. Loose or broken spokes can usually be adjusted with a spoke wrench, some penetrating oil, and a bit of patience.

Tires: Many people assume a tire is fine (even old ones) if there's sufficient rubber left on the tread. Not always. You also need to be aware of dry rot and/or old, hard rubber. If the tires are worn, show cracking on the sidewalls, or are excessively hard, replace them. Is it worth dumping your bike because you didn't replace the old tires?

Tire valves and tubes: Another often-overlooked area. Old tubes and valves can slowly leak air without you realizing, especially old ones that might suffer from rot or decomposition. These are worth checking and replacing if there's any question about their condition. And I always replace the inner tubes when replacing the tires.



11
We like to add a pigtail to the batteries on our bikes to make it easier to hook up a battery charger. The seller was kind enough to do that for us.



12
We removed the two covers from the primary: one to check the primary chain and the other to check the clutch. Ideally, the primary chain is snug and well-oiled. Not loose or too tight, and has no signs of rust or damage. Ours was good on all counts. The clutch should be within spec and engage and disengage freely. Check your specific shop manual on this.

Chassis

Frame: Various Harleys have different frames with different needs. For simplicity's sake, let's narrow this down to just rigid frame and swingarm frame. If they show any signs of damage, make sure they're safe before you bolt parts back on the bike or ride it. The same goes for the steering head and bearings as well as the swingarm and bearings. Also, if you have them, make sure the rear shocks are up to the job.

Forks: Depending on what kind of fork your bike has (springer or telescopic), there are different issues. Regardless of which you're running, make sure it's up to the job. Springer forks need to be straight, undamaged, and have lots of lubrication. Telescopic forks should be true and undamaged. They also need good springs and the correct amount and weight of fork fluid. No need to risk your bike or life with damaged or worn-out forks.

Brakes: The last thing you want to do with your bike is ride hard into a turn



13
We drained the sump of all the oil. This particular model doesn't allow an easy way to drain the transmission, but ours was dry anyway. Check out the oil for signs of water contamination (white fluid) and metal particles. Ours was good.



14
Add the proper quality and quantity of oil to the transmission and to the engine.

or stop sign and discover your brakes aren't up to the challenge. Always check your brakes before you go on your first ride. These include the front and back brake shoes and plates as well as the brake cables and/or rods.

Electrics

Charging: This is more complicated than we can quickly cover here. Let's just say charging is good and noncharging is bad. A fast and easy way to check is to see if the headlight gets brighter when you rev the engine.

Battery: If your bike has been sitting unattended for a year or more with a regular, lead-acid battery, you can pretty much bet it's shot. Rather than trying to resurrect the old one, just go and buy a replacement. Believe me, it will be worth it in the end. Once installed and charged, I like to install a pigtail connection, making it quick and easy to plug in a smart charger or another kind of battery charger. They keep the battery in working condition for a lot longer.

Lights and Horn: Easy enough to check. On and off, high and low headlights, rear light and brake light, and a

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15

(Left to right): Our team, Rob Nussbaum, John Cullere, and Ryan Stalter at Retrocycle. We rolled the bike outside and pulled it up on the rear stand. We checked that the gas tanks were close to empty. We got the fire extinguisher handy just in case and added some fresh gas to one of the gas tanks. Then we opened the fuel pet-cock and waited for the gas to fill the float bowl in the carburetor. It's not uncommon for the old float to stick, causing the bowl to overflow. To our pleasant surprise, this wasn't the case here.

horn that honks. If a bulb doesn't work, start by checking if the bulb is good and the connection is clean. Otherwise, it could be a wiring issue that will take more to troubleshoot and fix.



16

In theory, the bike was ready to start. The battery held a decent charge. We'd checked that the engine kicked over properly and that the oil pump, throttle, valves, and points were set to spec. It had decent compression, and the carburetor didn't leak. Time to find out if it will fire up and how it will run! I'm pleased to report we gave it three or four primer kicks, turned on the ignition, and it fired on the second kick. And that's after sitting for more than 10 years! Pretty impressive. We pumped in a little extra oil to the sump just in case and let it warm up. Once warm, we took off the choke, and John fine tuned the idle and the slow-speed needle. We were all impressed with how well it ran and how quiet the engine was. We ran it through all three gears. The clutch and transmission worked well.

Cosmetics

I would hope you don't need us to share how to wash and wax your bike, how to clean the metal finishes, or condition the seat and saddlebags (if you have any). Unless they're historically significant, I like to remove all of the old stickers, tree sap, tar, and other visual distractions. Most bikes look a lot better after a solid cleaning and detailing.

Once you have gone through the bike mechanically and cosmetically, start it and let it warm up for a minute or so, then go for a ride. Take it nice and easy and get to know the bike. You'll probably want or need to make adjustments along the way, but that's part of getting to know your new machine. Don't forget to change the fluids before you ride it and again within the first 50 miles or so.

SOURCES

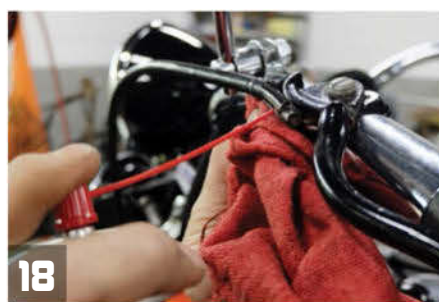
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17

After it was fully warmed up, we redrained the engine oil and added fresh oil, then, knowing this was a strong running bike, we turned our attention to other details. The headlight (high and low) worked fine. So did the horn, but the rear light was a different story. We removed the lens and bulb, cleaned the contacts, and were good to go.



18

The front brakes didn't work well or operate smoothly. We disconnected the front brake cable and lubed it thoroughly and we made a few adjustments to the brake and brake backing plate, which helped a lot.



19

With grease gun in hand, we worked our way from front to back and top to bottom, making sure all the grease nipples were in place, and we gave the bike a good lubrication.



20

We ensured the tires were in decent condition and properly inflated. Then we checked the wheels for true and the spokes for proper tightness by dinging them with a long, metal screwdriver. If too tight or too loose, we can adjust them with a spoke wrench. AIG

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INSTALL

By Tricia Szulewski

Control Freak

RSD Sportster mid-controls and DK Custom highway peg mounts



TOOLS NEEDED

- 1/4" Allen wrench
- 3/16" Allen socket
- 3/16" Allen wrench
- 5/16" Allen socket
- 7/32" Allen socket
- 12mm socket
- T-27 Torx socket
- T-40 Torx socket
- 9/16" wrench
- 3/4" socket
- 1/2" wrench
- 5/13" Allen wrench
- 3/8" Allen wrench
- 7/16" wrench
- Needlenose pliers
- Ratchet
- Torque wrench (in-lbs.)
- Blue threadlock
- Brake fluid

IN THE LAST ISSUE OF *AMERICAN IRON GARAGE* (Spring), Glen from Woodstock Harley-Davidson in Kingston, New York, installed a killer set of pipes from Roland Sands Design (RSD) on a 2011 Sportster Forty-Eight. What we found out during the install, however, was that the Slant 2-into-1 Carbon Ops exhaust doesn't work with the Sporty's stock forward controls. So we removed the right foot control in order to install the exhaust, but left the left foot controls intact so we could run the bike on the dyno when we were finished.

Luckily, RSD offers a couple of options that work with the new setup. The company's newest addition to its café product line, rearsets for Sportsters available in Black Ops and contrast-cut, will appeal to aggressive riders. Our bike's owner, Lynn, was concerned about long-haul comfort, so she chose to go with the RSD mid-controls for Sportsters in

Black Ops (#1623-0189/\$599.95) instead. The knurled pegs and black wrinkle finish look badass and complement the pipes perfectly and provide a sportier ride.

We gave Lynn the option to stretch out by adding RSD Traction footpegs in gloss black (#1620-1160/\$109.95) to DK Custom Products' Stealth adjustable highway peg mounting kit (#DK-SHP-BLK/\$119.95). This cool mount set attaches to the original peg mount location on the downtube and can be easily tweaked to five different pivot points.



1 The Sportster Forty-Eight comes stock with forward controls. We prepare for the installation by securing the bike on a jack stand.



2 To install the DK Custom highway pegs, use a 5/16" Allen socket to remove the left-peg bracket.

The RSD mid-controls are pretty trick components but don't come with everything you need to complete the job. The DK Custom highway peg mounts (inset photo) do come with everything you need except the actual pegs.

This installation isn't for the novice wrench, though. While RSD quality, fit, and finish are impressive and justify the cost, the instructions are vague, and there are required parts that RSD does not include, like a shifter lever. Oddly, RSD doesn't make one to match the other parts in the kit. So, we ordered Harley-Davidson's chrome mid-controls shifter lever (#34660-04A/\$69.15) and hope that RSD comes out with something we can replace it with soon.

The more difficult challenge we faced halfway through this install was that by moving the master cylinder to the right side of the bike, a new brake line was necessary. With no ordering suggestions in our instructions, we opted to keep most of the stock lines and joined the stock line from the caliper and brake light switch to a coupler/splitter donated from another bike. From the coupler, we ran a new line that we made from left-over Magnum Shielding parts from our V-Rod brake line install (page 78) to the master cylinder.

With these mid-controls and traction pegs installed, it's hard to imagine the Forty-Eight with any other setup. Now she looks as mean as she sounds.



3 Place washers on two of the DK Custom eight-arm bolts and apply blue threadlock to them. Using a 7/32" Allen socket, run one of the bolts through the highway arm's slotted cutout through a lock washer and loosely install it to the forward position on the frame.



4 Choose one of five positions in the adjustable slot to run the other bolt through to attach it to the frame. Make sure the front wheel has clearance to turn left and right. Remember which position you chose so you can use the same position on the right side.



5 Apply blue threadlock on the supplied bolt and use a 3/4" socket to loosely attach the footpeg mount.



6 Use the clevis bolt and nut with the spring washers to attach the footpeg. The spring washers allow you to fold up the pegs when not in use. Rotate the assembly until it's positioned where you want it and tighten the 3/4" bolt. Repeat on the other side.

THE JIMS DAILY NEWS

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7
To install the mid-controls on the left side of the bike, use a T-27 Torx socket to remove the three derby cover bolts that are in the six-, eight-, and 10-o'clock positions.



8
Use a 1/4" Allen socket to remove the shift rod.



9
Run the RSD-provided bolts through the left-side backing plate and spacers and apply blue threadlock.



10
Use a 3/16" Allen socket and torque the three bolts to 90-100 in-lbs.



11
Apply blue threadlock to the RSD shift peg and screw it onto the Harley-Davidson mid-controls shifter lever. Slide the lever onto the spline and tighten the cinch bolt with a 1/4" Allen wrench.



12
On the right side, we already removed the foot controls when we installed the RSD exhaust (Spring 2015), so we begin by removing the four bolts on the sprocket cover with a 3/16" Allen socket.





13

Prepare the right-side RSD backing plate with the four long screws and washers and dab the threads with blue threadlock.



14

Use a 3/16" Allen socket to install the backing plate and tighten the four screws to 90-100 in-lbs.



15

To remove the rear master cylinder, pull back the plastic reservoir cover, then use a 3/16" Allen wrench to unbolt the reservoir.



16

Use a 5/13" Allen wrench to unbolt the hose clamp. Unscrew the reservoir cap and drain the brake fluid into a jar, being careful not to spill any fluid on motorcycle parts or your skin.



17

Use needle-nose pliers to remove the pinch clamp and pull the brake hose off the master cylinder.



18

Use a 12mm socket to remove the brake line banjo bolt from the master cylinder.

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19
Use a 1/4" Allen wrench on the two bolts securing the master cylinder to its mounting bracket.



20
Remove the clevis pin to free the master cylinder. Then use a T-40 Torx socket to remove the bracket.



21
Tap out the spring pin (arrow) and hold the nut with a 9/16" wrench while you unscrew the stock clevis.



22
Prepare to mount the master cylinder assembly using hardware as shown. Apply blue threadlock to the bolts.



23
Install the reservoir mount to the back of the longer screw. Use a 1/2" wrench to hold the nut while you turn the bolts with a 3/8" Allen wrench.



24
Screw the RSD rod end on and insert the pivot spacer.

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25

Mount the rod to the RSD brake pedal using a 7/16" wrench and 3/16" Allen.



26

Use the remaining screw, spacer, and nut to attach the reservoir. Tighten with the 3/16" Allen wrench and 7/16" wrench.



27

Cut the brake hose so it can attach cleanly to the master cylinder without kinking or touching the hot parts. Use the pinch clamp to secure it.



28

Finding a coupler/splitter in a pile of takeoff parts from another bike, we used the stock T-40 Torx bolt to mount it where the master cylinder bracket used to be. Then we reattached the brake line on the left side of the bike and made a new line to run from there to the new master cylinder location.



29

The last step is to add the correct amount of DOT 4 brake fluid and bleed the line. AIG

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GARAGE BUILT

By Steven Wyman-Blackburn • Photos by Greg Cobb

Never-ending Honeymoon

Marriage tag team build e' some nail polish

IN AN EFFORT TO CONTINUE THE HEARTFELT tradition of butchering the English language, I may join the privileged few who have quoted in print a legendary character known only as The Impressive Clergyman, “Mawage is wot bwings us togeder tooday.”

While the 1987 film *The Princess Bride* is a modern-day classic, we should probably talk about motorcycles, and, as it turns out, marriage is, well, what brings us together today. What's more, this 2012 Harley-Davidson Street Glide is like a wedding ring for the happy couple of this story, a true representation of holy matrimony. I like to believe that Kevin and Blair Bomar made



the vow “to have and to hold” while secretly adding “to have and to ride this FLHX” ... as well as customize it, of course.

While destined to one day become Blair's ride, this batwing-faired Touring model started out as a gift from Blair to her now ex-husband. For herself, Blair had purchased a 2012 Softail Heritage. Little work was done to the



Street Glide before Blair found her current husband, Kevin, save for the 21" Helix hoop from RC Components you see now. Meanwhile, Blair's Softail received much more attention: front and rear matching RC Components wheels, Vance & Hines Big Radius pipes, and blacked-out parts.

And in the mad shuffle that later ensued, it seemed as though Blair would never see the Street Glide again. "He got it in the divorce," says Blair. "But he couldn't keep up with the payments so I got the bike back. It's been my baby, and I've been working on it ever since."

But Blair hasn't been working on the bike alone. She works alongside Kevin. Described as a collaborative effort, Blair gave me a few examples of what a building session might look like. "I read the instructions and give him all the tools. And he bolts on, and I help him hold stuff and help him get brackets into certain places," she says. While she told me this over the phone, Kevin, who was apparently sitting beside her, added a garbled comment. "Yah," she agreed. "I shop for the parts like he said. I'm good at that." Turns out, they were currently on a truck route, just one of



the many things they share. “We do everything together,” Blair says. “We run trucks together by trade. We’re used to working together.”

As one might expect, while Blair’s Heritage has been left on the wayside since the wife-and-husband build began, some of the Softail’s personal flair has been transferred to the Street Glide, like the Vance & Hines Big Radius pipes and the soon-to-come matching wheel. (“We’re hoping to have that wheel before Sturgis.”) But, of course, the FLHX has received some extra love, mostly by way of Arlen Ness and Kuryakyn components. Alongside the Ness point covers and various other embellishments from its Engraved collection — most notably the saddlebag latches — the spearheading part, for me at least, is the Ness Double Barrel breather. As far as Kuryakyn is concerned, they installed its bag extensions as well as a copious amount of light add-ons: turn signal blades and driving lights with a 7" headlight, “which is absolutely awesome for riding,” comments Blair. Both she and Kevin plan on installing the newly bought 1/2" purple LED strips, which Blair calls the “winner project.” The LEDs come on a roll of 600, which measures up to 15' of lights. “We’re going to solder and wire and do it all on our own,” she says.

The only customizing work they left to the pros was the elaborate paint job. That said, it comes with its own humorous story. After finding a painter and describing what they wanted, he returned with what Blair described as “some of the color splotches,” saying, “Well, me being a girl, I couldn’t really tell from a 1" square what the color would actually look like in the sun.” So after finding out that the



painter could color-match whatever she came up with, guess what Blair did? “I went to my local Walgreens and bought nail polish. I painted them on glass and I said ‘Can you make it look like this?’ And he said ‘Yes I can.’” While it was the painter’s idea to do the marble (“I just wanted to do black”) and even though he was the one who laid on the paint, “the silver and purple was my idea,” Blair clarifies. “And with the points, those were my idea, too.”

And like all great marriages, each spouse makes the other a better person. For Kevin, his better half nudged him into a particular community we can all appreciate. “I actually got him into Harleys,” says Blair. “He was into dirt bikes for years. He just bought a ’14 Ultra Limited after we got married.”

She’s definitely a keeper. **AIG**



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Inspect It Yourself

Checking key systems



The crack in this vapor hose was found during a do-it-yourself inspection.

THE LOCAL HARLEY DEALERSHIP CHARGES \$45 for a “walk-around inspection” of any Harley model. This cursory inspection pays for half an hour of shop time and includes checking fluids, tire pressure and tread depth, handlebar-mounted controls, lights, horn, clutch adjustment, and brake pad condition. Riders who don’t do their own maintenance may regard a walk-around inspection as a good value, but serious do-it-yourselfers can do their own much more comprehensive inspection.

In addition to common hand tools, you’ll need a digital multimeter to check the battery and charging system and a belt tension gauge. Make sure you have the owner’s manual for your bike on hand to confirm dipstick locations during the fluid checks. A shop manual for your bike is a necessity for the belt tension check because procedures vary for different models.

Air Filter and Lights

Let’s start by checking the air filter. Depending on the model of bike, the air filter cover is held on by one or two screws. Remove the screw(s) and carefully pull the cover off. What you find on the filter will depend on where the bike has been ridden and how long the filter has been in use. Some air filters are meant to be used until filthy then discarded. Other filters can be cleaned and reused. I’m a firm believer in reusable filters because their higher initial cost is offset by the economy of cleaning and reusing them.



This air filter needs to be replaced.



Check all the lights on your bike.

Checking the lights is easy and requires no special tools. Turn the ignition switch on and check the high and low beams in the headlight. Is the taillight on? Activate the turn signals. Are the turn signals flashing? Don’t forget to check all four turn signals: left and right, front and rear. Switch the accessory lights on and off to confirm that they work. Apply the front brake while watching the brake light. Release the front brake and apply the rear brake. The brake light should light up with either the front or rear brake applied.

Blow the horn and then switch the ignition off. Please note that I’m assuming things are working as they should. If the lights don’t work or the horn doesn’t blow, the troubleshooting and repairs needed

are beyond the scope of an article on inspection.

Battery and Charging System

Now let’s move on to the battery and charging system. First, there’s the visual inspection of the battery. Are the terminals and cables clean and properly tightened? Is the battery’s case cracked or bulging? If the battery passed the visual inspection, it’s time to move on to electrical measurements.



An open-circuit voltage test indicates this battery is fully charged. A healthy charging system produces approximately 14.5 volts when the engine is running at a fast idle.

Two voltage measurements can indicate if the battery holds a charge and if the charging system is working.

Measure the battery voltage before starting the engine and compare the voltage to the specifications in the owner’s manual. Start the engine and measure the battery voltage again. This second measurement should be approximately 14.5 volts when the engine is running at a fast idle. If the voltage doesn’t increase when the engine is running, there may be a charging system problem.

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The white residue on this battery suggests a seal was damaged when a battery bolt was overtightened.

Imagine a motorcycle without handlebars. How would you ride or control it? The switches and controls on the handlebars are equally important. So let's make sure they all work properly. Are the handgrips secure? Are the clutch and front brake levers bent or cracked? Does the clutch cable have the correct free play?

Check the fluid level and condition in the master cylinder on bikes with a



DOT 5 brake fluid is purple. If it's turned brown with age, it should be replaced.

hydraulic clutch. Are the handlebar's top clamp bolts properly tightened?

Start the engine and then move the run/stop switch on the right handlebar to the stop position. If the engine doesn't stop, there may be a problem in the switch or wiring.

After stopping the engine, turn the throttle fully open and then release it. The throttle should move smoothly and return to the idle position quickly. Problems with throttle movement may be caused by inadequate lubrication in the cables, incorrect routing of the cables, or a weak throttle return spring. Newer bikes with the ride-by-wire throttle use a sensor inside the right handlebar to send signals representing throttle position and movement to the circuitry that operates the fuel injection.

Examine the mirrors for cracks and loose swivel joints. Are the mirrors' mounts sufficiently snug to prevent unintentional movement?

Depending on its age, your bike should have four or five reflectors as required by a federal motor vehicle safety standard. There should be an orange reflector on each side of the bike near the front and a red reflector on each side near the back. Newer models will also have a red reflector somewhere on the back of the bike. Reflectors have been known to fall off when the adhesive holding them in place dries out.

Brakes

Brakes are a crucial system on all vehicles. Looking at the sight glass on each master cylinder is only the beginning of the brake inspection. Clean the outside of the master cylinder and remove the cover. The color of the fluid will reveal its age and condition. Fresh DOT 5 fluid is purple but turns brown with age. Fresh DOT 4 fluid is a pale amber color that gets darker with age. If the fluid's color indicates that it's still in good condition, examine the gasket that goes between the cover and the fluid reservoir. This gasket can be reused if it's not torn or deformed. Brake lines carry the hydraulic pressure from the master cylinder to the calipers. A typical brake line has a metal fitting at each end, a length of metal tubing along the part of the line that doesn't need to flex, and reinforced rubber tubing in the part of the line that flexes with the movement of the suspension.

Inspect the fittings for leaks. Look for signs of corrosion, dents, and other signs of physical damage on the metal tubing. Check the rubber parts of each brake line for cracks, cuts, scrapes, or signs that the line has been pinched.

Harley-Davidson has used numerous types of calipers since disc brakes were introduced in the 1970s, but they all operate on the same principle: brake fluid under pressure from the master cylinder presses on a piston, which pushes the brake pads against a rotating disc. After examining the calipers for fluid leaks, grab the caliper and try to move it. Single-piston calipers need to move a fraction of an inch from side to side in order to function properly. Multi-piston calipers are fastened solidly to the fork tubes or swingarm



Examine each brake rotor for grooves and excess wear.

and should not move.

Brake pad thickness can be checked by looking at the area where the pads contact the rotor. Front pads are easier to see. Checking rear pads generally requires the removal of one saddlebag. Brake rotors sometime become warped due to repeated heating and cooling. One symptom of a warped front rotor is a pulsation in the brake lever when the front brake is applied. A warped rear rotor can push the pads farther back into the caliper, and result in a very brief delay between the time the brake pedal is pressed and when the pads contact the rotor.

Tire Pressure

Proper tire pressure is crucial to handling, braking, and tread wear. The two rules of checking tire pressure are: use a good-quality gauge and check the pressure when the tire is cold. Consult the owner's manual for your bike to learn the recommended pressure and be aware that there are different pressure requirements for riding solo and carrying a passenger. Note: aftermarket tires may have slightly different pressure recommendations than OE tires.

Tread depth can be measured with a penny or a quarter, but a better way is



Proper tire pressure is crucial to handling, braking, and tread wear.

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with a tread depth gauge. Measure the tread depth at several places around the tire to check for uneven wear. Don't forget, different states have different standards for minimum safe tread depth. The tread and the sidewall should be examined all the way around the tire for cracks, cuts, bulges, and signs of peeling.

One final item that should be examined on the tire is the date code. Tires don't have expiration dates on them like many food products do, but the rubber deteriorates with age and loses its elasticity. Tires manufactured after 2000 have a four-digit date code branded into the sidewall. Deciphering the code is easy after learning how it works. For example, "0612" means the tire was manufactured the sixth week of 2012 while "3311" represents the 33rd week of 2011. Different tire companies have different replacement recommendations based on tire age. The best source of information is the tire company's web site.

Wheels

Wheels (whether cast or wire spoke) must be inspected for cracks, dents, and corrosion. A rudimentary spoke check is to have the bike upright with the rider's weight on it, then tapping the topmost spoke on each wheel with a screwdriver blade and listening for a ringing sound. Next, roll the bike to position the next spoke at the top and repeat the process for all of the spokes on both wheels. All of the spokes should produce a "ring" when tapped. If a spoke makes a "thunk" or "thud" when tapped, it's loose.

Exhaust

Exhaust system inspection is often overlooked during a do-it-yourself inspection even though an exhaust system issue can cause a bike to fail a DMV inspection. A damaged gasket at an exhaust port on either cylinder head can create extra noise. Are the fasteners at each headpipe properly tightened? Have the heat shields come loose? A loose heat shield won't add to the exhaust noise but will have an annoying rattle when the engine is running. Are the muffler clamps tightened to the proper torque? Has corrosion created any holes in either muffler?

Stock exhaust systems have featured a crossover pipe (or equalizer tube, depending on where you learned motor-

cycle repair) since the Evolution engine era. Examine the crossover pipe for cracks, dents, and holes and make sure all fasteners are properly tightened.

Belt Drive

When was the last time you looked closely at your bike's belt drive? Look for cracked, broken, and missing teeth around the entire inner circumference of the belt. It doesn't take long for a cracked tooth to turn into a missing tooth, which then puts extra load on the remaining teeth on either side of the gap.

The accurate way to check belt tension is with a belt tension gauge (Harley part #40006-85 or equivalent). Some bikes have a slot in the lower belt guard to indicate where the tension



Check the belt tension using a proper gauge and the correct procedure for your motorcycle.

should be checked, some don't. This is one instance when you should have a genuine Harley-Davidson service manual for your bike: different models from different years have different procedures and specifications for belt tension. In some cases, something as subtle as a change in belt width can result in a totally different procedure being used to check belt tension.

Here are some generic instructions. With the bike upright, and the rider's weight on the saddle, press the tension gauge against the belt midway between the sprockets. Watch the lines etched on the gauge while watching the deflection of the belt. Measure the deflection of the belt, then roll the bike about a foot, and take another measurement. Repeat this process until the belt has made one circuit around the sprockets. Compare the deflection at the tightest part of the belt to the specifications in the shop manual. Belts don't stretch very much after the break-in period, but it's good to be aware of proper tension to avoid problems down the road.

Suspension

Suspension system components generally wear out, so the rider may not be aware of the gradual deterioration in handling and ride quality. Check the front suspension by straddling the bike and getting it upright. Apply the front brake and rock the bike back and forth to compress and extend the front forks. Hissing, squeaking, and gurgling noises aren't a good sign. Next, bounce up and down on the seat to compress and extend the shock absorbers and springs. (You can skip this part if you ride a hardtail bike.) Unusual noises you might not hear while riding may be a cause for concern. Fluid leaks caused by worn or damaged seals in the forks or shock absorbers are definitely a cause for concern.

Frame

Basic frame inspection is all visual. Look for bent or dented tubes, cracked or broken welds, and serious corrosion. If your visual inspection reveals any of these problems, seek the expertise of a qualified specialist who has a frame table. Frame geometry and integrity are crucial to safety and require the services of a properly equipped shop.

Coolant and Lubricant

The final part of the do-it-yourself inspection is the coolant and lubricant checks. Different models require differ-



Coolant level in this Twin-Cooled Touring bike is checked in the right fairing lower.

ent methods for checking fluid levels. Some models need to be upright when checking engine oil while others must be on the sidestand. Twin Cam bikes and newer Sportsters must be upright when the primary lubricant is checked. Speaking of Sportsters, there's no dipstick for the transmission lubricant because the transmission and primary



The V-Rod and both the 500cc and 750cc Street models have systems where one lubricant is shared by the engine, primary drive, and transmission. Hence there's only one dipstick on the right side of the bike. Sportster models have the oil tank on the right side of the bike beneath the front part of the seat. The dipstick is readily accessible atop the oil tank. Softail models also have the dipstick for engine oil in a similar location. Twin Cam Dynas and Touring bikes carry their engine oil in a tank that's at the bottom of the transmission. The locations of the engine and transmission dipsticks on Twin Cam bikes

are slightly different on bikes with six-speed transmissions compared to the earlier five-speeds. As a rule, the cap on the engine oil dipstick is the larger of the two. Study the owner's manual for your bike to learn the exact location of the two dipsticks and whether the lubricants are checked with the bike upright or on the sidestand.

Checking the primary lubricant involves removing the clutch inspection cover and looking into the primary chaincase when the bike is upright. This is a situation when a perfectionist will remove the cover, check the fluid level according to the factory shop manual, and then use a new gasket when putting the cover back on using a torque wrench while tightening the screws in the proper sequence. If that procedure seems like a lot of effort, just check for leaks between the inner and outer primary covers and the areas where the inner primary cover fastens to the engine and transmission. If there are no signs of leaks, it's probably safe to assume the fluid level is correct.

Riders of liquid-cooled and Twin-Cooled bikes should check the cooling system. The V-Rod has its coolant

reservoir beneath the faux fuel tank. Street 500s and 750s carry their coolant reservoir behind a cover on the left side of the bike. Touring bikes with the Twin-Cooled system have a coolant reservoir in the right-side fairing lower. Along with checking the coolant level, all the hoses, pipes, and clamps should be checked for leaks and any signs of physical damage.

If you've been paying attention, you may notice I've omitted primary chain tension inspection. Twin Cam bikes have had an automatic primary chain tensioner for about eight years. My personal experience with Sportsters is that if the transmission can be shifted smoothly and it's easy to find neutral, then the chain tension is probably within specifications. However, if you can hear a loose chain slapping around inside the chaincase, it's time for an adjustment.

There you have it: an inspection that probably took more than half an hour of your time but is much more comprehensive than what the dealer may have done in half an hour. **AIG**

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SOUND PERFORMANCE

You're ready to customize that new machine, but where to start?

Pipes are one of the most distinctive features of any ride and swapping out the stock exhaust is a simple modification to give your bike your look and sound. However, there are many options — Chrome, Black, 2-into-1, 2-into-2 — and you want to choose the one that expresses the look, the sound and mostly the performance you want.

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By Ken McCurdy • Photos by Steve Lita

Pump Up The Volume

Adding an amp and upgrading the speakers



Snap, crackle, pop! No, I'm not eating Rice Krispies. That's what I heard whenever I turned up the volume on the stereo in my 2006 Road King's Dragonfly fairing. When I purchased my bike, it came with the quick-detach Dragonfly fairing and aftermarket stereo and speakers already installed. But whenever I cranked up the volume, I heard that familiar cracking and popping coming from the old, worn-out speakers, and it was driving me crazy as I enjoy my music!

After some online research, I reached out to KICKER and placed my order for a PX100.2 100-watt amplifier (#12PX1002/\$169.95) and a pair of PS69 coaxial speakers (#40PS692/\$249.95). I chose these items because they're designed and tuned for the powersports industry, and the amplifier has a small footprint and is specially designed for motorized vehicles with smaller battery and charging systems. It also comes with a single Molex plug containing all the wiring connectors for easy installation, and it's weather-resistant, too. The 6" x 9" speakers have weatherproof drivers, specifically built for use on

motorcycles, and super-efficient 20mm neo-titanium dome tweeters.

After detaching the Dragonfly fairing and installing the new amp and speakers, I reattached the fairing, plugged it into the quick-detach wiring harness, and, with bated breath, turned on the power. I was more than impressed with the sweet sound emitting from the new speakers. No more snap, crackle, and pop! But the real test was when I swung my leg over the seat and headed out for a ride. What a difference the KICKER amp and speakers make! I can actually hear the sweet highs and deep lows, even with my

TOOLS NEEDED

- 5/32" Allen wrench
- 3/8" wrench
- 7/16" wrench
- Wire strippers/crimpers
- Phillips screwdriver
- 3/16" drill bit
- Battery-operated drill



The KICKER amp comes with a tidy wire harness and adjustment switches hidden behind a rubber dust cover.



The test mule for this install is an aftermarket Dragonfly fairing, which already features 6" x 9" speakers.



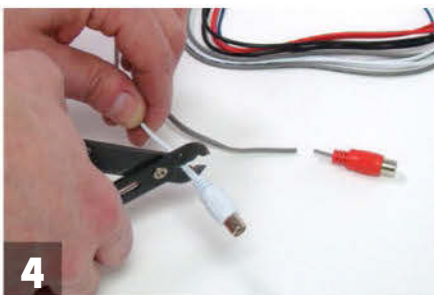
We start the project by disassembling the inner and outer halves and removing the stock speakers.

full-face helmet on. Even though my fairing is detachable, with this new KICKER gear, I may be leaving the fairing on for the long haul.

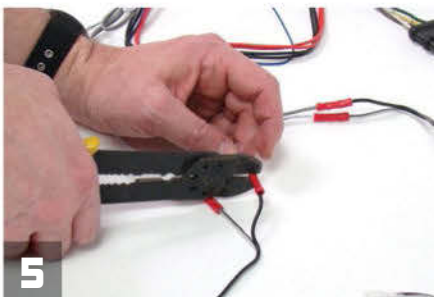
As I mentioned above, my Dragonfly fairing is removable, which I took advantage of for this install/upgrade. Follow along as we install the amplifier and swap out the worn-out speakers.



3 Speaker installation is a straightforward replacement using the original hardware and a 3/8" wrench.



4 On the new KICKER amp harness, we snip off the RCA plugs as per instructions. These wires will be stripped and connected to the radio speaker output wires.



5 We remove the radio harness to make it easier to work with on the workbench and crimp the amp harness leads to the appropriate radio harness leads. The main power will come from the same four-pin, quick-disconnect harness that feeds power to the Dragonfly fairing stock radio.



6 Then we find a location for the amp on the Dragonfly aluminum vertical bracket and mark the spot with a felt-tip marker.



7 We drill two 3/16" mounting holes in the Dragonfly bracket and bolt the amp in place with the amp adjustment panel pointed down for easy access.

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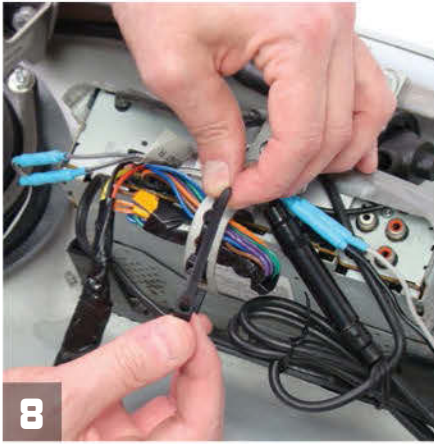
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8

After plugging in the harnesses, we zip-tie everything in neat bundles, then reassemble the fairing front and back panels.

SOURCES

DRAGONFLY CYCLE CONCEPTS

714/742-6858
DragonflyCycleConcepts.com

KICKER

405/624-8510
Kicker.com/Power_Sports



9

Once on the bike, the four-pin connector is easy to get to. This stereo now pumps an extra 100 watts of KICKER power. **AIG**

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Tires 101

CHOOSING THE RIGHT RUBBER FOR YOUR RIDE

Buying new tires for your motorcycle doesn't need to be difficult if you know the answers to a few key questions.

What type of riding do I typically do?

If you spend hours in the saddle without stopping, a touring tire that can go long distances without excessive wear is what you're looking for. Or if you're about carving the curves on your cafe-racer a softer sport tire may be your answer. However the solution for many riders are sport-touring tires. Not quite as sticky as the latest and greatest sport compounds, but if you like to ride a few hundred miles a day, including slabbing it to get to your favorite set of twisties, these tires will last longer than a sport compound but still perform once you get to the "good" roads.

Do I want the same tires that I currently have?

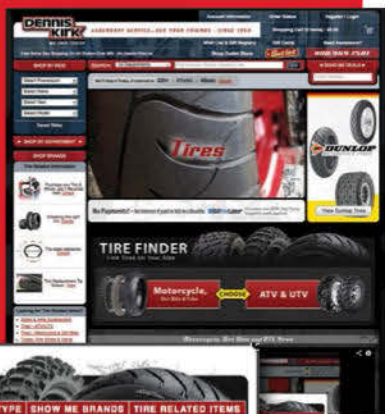
If you just want to replace your worn tires with the same model, the task of buying tires is simple. Shop using the make/model/year feature at denniskirk.com. If the OEM tires are in stock (and most likely they will be) it's as simple as adding them to your cart and checking out. If there are multiple tires to choose from, take a look at your existing tires, write down the brand and tire specs to refine your results.

Do I know what size tires I need?

If you know what size tires you need, you're off to a good start. If you don't, you can of course get the sizes from the existing tires on your bike, or from the owner's manual if you have it. You may also use our make/model/year feature at denniskirk.com, which will automatically narrow tire results to tires that will fit your motorcycle.

There are multiple tire size numbering systems, and it can get pretty confusing. Make sure to educate yourself on tire sizes and speed ratings before selecting your tires.

For more information on choosing the correct tire, visit the Dennis Kirk tire finder denniskirk.com/tires-and-wheels. The tire finder will assist you in selecting the correct tire for your ride and will show you the brands and options available.



TIRE SIZES EXPLAINED

TIRE CROSS SECTION WIDTH

The first number or second letter in a tire size represents the nominal width. Width is measured in a straight line from the furthest point on one sidewall, across the tread, to the furthest point on the opposite sidewall. If there is any question whether or not a larger than OEM tire will fit your bike, you're encouraged to call Tech Service. The different size numbering systems specify widths in different measurements. You can view a width cross reference table below.

ASPECT RATIO

Aspect Ratios indicate a tire's cross-sectional profile. The smaller the number, the lower the profile. It expresses the height to width ratio as a percent. A 90 aspect ratio means the tire's cross sectional height is 90% of its width. The aspect ratio appears immediately after the width in the Metric, Alpha and Low Profile Inch numbering systems.

SPEED RATING

Speed Ratings are internationally recognized maximum speeds at which the tire may be used with maximum load when the maximum listed inflation pressure is used. Maximum loads and inflation pressures are found on the sidewalls of the tires. Speed ratings are coded by a letter, which appears directly after the width, aspect ratio, or as part of a three digit Load/Speed Index, found on the tire directly after the complete size designation. The letters and their corresponding speeds are listed in the table below.

CODE LETTER	MAX MPH	MAX KPH	CODE LETTER	MAX MPH	MAX KPH
J	62	100	H	130	210
K	68	110	V220	137	220
L	75	120	V230	143	230
M	81	130	V or V240	149	240
N	87	140	V250	155	250
P	93	150	V260	161	260
Q	99	160	W or V270	168	270
R	106	170	V280	174	280
S	112	180	V290	180	290
T	118	190	Y or V300	186	300
U	124	200	Z	above 149	above 240

Since Z-rated tires have no recognized speed ceiling, the rating simply means higher than 149mph.

TIRE CONSTRUCTION

The Tire Construction, when included in the size numbering, is listed after the speed rating. The two options for tire construction are Belted (B) or Radial (R). A belted tire has fiberglass, Kevlar®, or aramid fiber belts for added strength and load capacity, however not all belted tires will have the B designation. If a tire does not have the Radial (R) designation, it is a bias-ply tire.

RIM DIAMETER

Rim diameter is the diameter of the rim/wheel on which the tire will be mounted, in inches.

ADDITIONAL INFORMATION

Some tires may have additional information in their size, for example WW, meaning it's a white wall tire. If the size is followed by TT, it means that it is a tube type tire, which requires an inner air tube. TL means it's a tubeless tire. Others may have M/C at the end of the size, which simply means it is a motorcycle tire.

TIRE SIZE NUMBERING SYSTEMS

There are four different motorcycle tire size systems currently in use. Understanding the differences will help you select the correct tires for your needs. The different systems are: **Metric**, **Alpha**, **Standard Inch** and **Low Profile Inch**.

• METRIC

Examples: 180/55ZR-17 · M130/80-18 · 130/80HB-18 · 130/80H-18

The Metric tire size system is the most common and also the most descriptive. Metric sized tires are used on just about every type of motorcycle, from the latest sport bikes to cruisers, touring bikes and everything in between. An "M" sometimes precedes a metric size when there is no speed rating used. It simply means that it is a motorcycle tire. Another letter is sometimes used after the speed rating to indicate belted (B) or radial (R) tire construction.

In the first example above, 180 is the width in millimeters, 55 is the aspect ratio (cross-section height is 55% of the width), Z is the speed rating (149+ mph), R specifies it's a radial construction tire, and 17 is the wheel diameter in inches.

• ALPHA

Examples: MT90S-16 · MT90HB-16

The Alpha size designation is most often used for touring motorcycle tires. They can be belted even without the B designation, which can appear after the speed rating.

In the first example above, M states that it is a motorcycle tire. T is the width (see cross-reference chart here.) 90 is the aspect ratio (cross-section height is 90% of the width). S is the speed rating (112mph) and 16 is the wheel diameter in inches. Since there is no designation of construction after the speed rating, it is a bias-ply tire.

• STANDARD INCH

Example: 3.25H-19

The Standard Inch systems are found on older motorcycles. Tires with these inch markings do not include an aspect ratio designation, which is 100%. It means the cross-section tire height is 100% of the width. Inch size tires are all bias-ply construction and not belted. They are no longer being fitted on new motorcycles and are gradually being phased out of use.

In the above size, 3.25 is the width, H is the speed rating, and 19 is the rim diameter in inches. The aspect ratio is not listed, but is 100% of the tire width.

• LOW PROFILE INCH

Examples: 4.25/85H-18 · 4.60S-16

This is also called the 82% Series Size System because the aspect ratio, when unspecified, is 82%. The tire's cross-section height is 82% of its width, except in cases where it's listed as 85%, as in the first example above. This system is limited to very few sizes and the motorcycle manufacturers are no longer using tires with this size system.

TIRE WIDTH CROSS REFERENCE TABLE

The table below illustrates the relationship between different tire size systems. Use it to compare the various widths and determine possible replacement sizes. Motorcycle tires are manufactured all around the world using different size designations, therefore we cannot imply exact interchangeability. Do not use for tires with aspect ratios lower than 80.

Permissible Rim Widths	Metric	Alpha	Standard Inch	Low Profile Inch
1.60, 1.85	70	MG	2.75	-
1.60, 1.85	80	MH	3.00	3.60
1.85, 2.15	90	MJ	3.25	3.60
1.85, 2.15	90	ML	3.50	4.10
2.15, 2.50	100	MM	3.75	4.10
2.15, 2.50, 2.75	110	MN	4.00	4.60
2.15, 2.50, 2.75	110	MP	4.25	4.25/85
2.15, 2.50, 2.75	120	MR	4.50	4.25/85
2.15, 2.50, 2.75	120	MS	4.75	5.10
2.50, 2.75, 3.00	130	MT	5.00	5.10
2.75, 3.00, 3.50	140	MU	5.50	-
3.50, 4.00	150	MV	6.00	-
4.00, 4.50	160	-	6.25	-



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Maintaining The Bar

The Harley (handle)bar exam

KNOWING HOW TO CONTROL YOUR MOTORCYCLE is crucial, and the best way to do so is with your hands and feet. Yes, you need your brain engaged to process information gathered from your eyes and ears, along with the tactile feedback the rest of your body provides. But on most bikes, your hands are the means to operate the throttle, front brake, and clutch, and it's important to be certain that all of these components are in good shape and working properly.

When it comes to operating the throttle, front brake, and clutch, there are a variety of different methods used, and the vast majority of Harley-Davidsons utilize the same means to operate these components. The throttle is operated by a throttle cable and an idle cable. The throttle cable operates the induction system as you roll on it with your hand, which increases the air/fuel volume passing through the carburetor or throttle body (on an EFI-equipped bike). Once you roll off the throttle, the idle cable allows the induction system to return to its idle position; it accomplishes this by closing off the air/fuel supply to the carburetor/throttle body. There are, however, exceptions to this: Harley's fly-by-wire, electronic throttle first introduced on the 2008 Touring models, older models, customs, and bikes that utilize a single-throttle cable or hidden throttle.

The front brake operation is controlled by a lever on the right-hand side of the handlebars, which operates a plunger inside the brake master cylinder, which then pumps brake fluid through the brake line, causing the front brake caliper to clamp down on the rotor. Depending on your Harley model, you will have either one or two rotors on the front wheel, but, either way, the operation of the brake is essentially the same. That said, there are two slight differences. Inside the master cylinder, single rotors use a 9/16"-bore master cylinder, while dual rotors utilize an 11/16"-bore master cylinder. And dual-disc models have a brake line that splits into two lines, one for each of the front rotors.

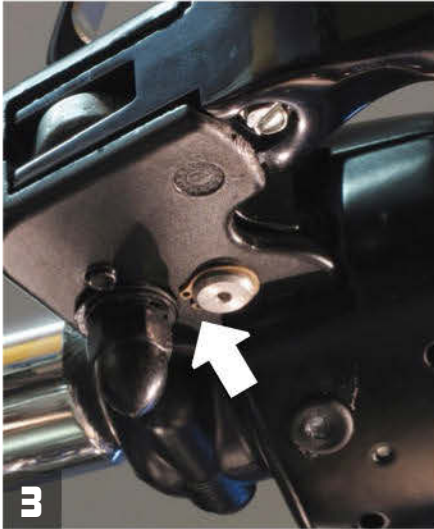
On the left side of the bars, a lever operates the clutch, which actuates a cable connected to the clutch mechanism on the right side of the transmission on Big Twins (Sportsters are on the left side). When you squeeze the lever, it pulls on the cable and operates a ball-and-ramp assembly that disengages



Overlooking regular maintenance on the clutch cable can result in a cable that binds or sticks, giving your left hand a serious workout. Lubrication will make it smooth as butter, and you'll ask yourself "why didn't I do that sooner?"



By screwing both ends of the adjuster toward each other, your overall cable length will decrease. This will aid in removing the lever from the hand control bracket.



3 Located on the underside of the left hand control is a snap ring that secures the clutch lever pin. You'll need a pair of external snap ring pliers to remove the ring and free the pin.

the clutch. When you release the lever, the clutch plates are engaged. There are some deviations from this particular system: hydraulically operated clutches and right-side drive clutches.

The Motor Company recommends you first adjust the clutch and throttle cables at the initial 1,000-mile service



4 Fred removes the pin by lifting it straight up through the bracket. The pin sits inside a small bushing that helps the lever move freely. During reassembly, a few drops of oil between the pin and bushing should keep things working well.

and then at each 5,000-mile service. Other recommendations from Harley: inspect the brake system at the initial service and then every 2,500 miles and check the brake fluid at the first service, then every 5,000-mile service after that.

OTHER INFO YOU SHOULD KNOW

Cables have a tendency to stretch over time whether you buy top-of-the-line products or bargain-basement brands. To ensure proper operation, you will still have to adjust them periodically.

You should check the master cylinder's fluid level with the top of the master cylinder parallel with the ground so that you can know the exact level of fluid. When topping off the fluid in Fred's bike, it was on the lift with the handlebars straight, and the master cylinder was only tilted slightly. Since Fred has checked this level many times, both on and off the lift, he knows exactly where the level should be.

Depending on your bike's model year, you will deal with different types of brake fluid. However, it's predominantly DOT 4 and DOT 5. An important note: only use the type of fluid called for in your service manual. Never use a different type of fluid or mix different types of fluid together. If you fail to follow these guidelines, it can lead to a malfunction of the brake system and a potentially deadly situation.

You may or may not have protective rubber boots covering the adjusters; it all depends on what company manufactured your cables. If you don't have boots on your cables, a great way to allow the threads to engage smoothly prior to the adjustment — and thus making the adjustment easier — is to spray it with WD-40 and give it a quick wipe with a rag.

Since cables can sometime get tight from built-up dirt, you might have to squirt a generous amount of WD-40 into the cable prior to lubricating it. This will help rinse out the dirt prior to lubrication.

Since the snap ring that secures the clutch lever pin is small, it can be easily lost or deformed by the snap ring pliers when you remove it. It's therefore a good idea to have a few extras on hand in case you need to replace one. If you take this advice, make sure you pick up some from your local dealer since they're not a standard size that you can find at any hardware store.



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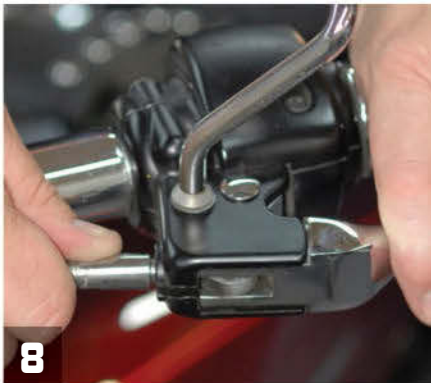
5 With the pin out of the way, the clutch lever is removed from the bracket. From here, Fred rotates the lever toward the bars to free the cable from it.



6 Fred positions the cable so it points straight upward. This makes it easier to lubricate the cable since gravity will help the lubricant flow down the length of the cable. You can use light oil for this or some Dri Slide lubricant. A few good squeezes of the bottle should do the trick. Move the inner wire up and down in the cable to make sure everything moves freely.



7 After reassembling the lever and pin, Fred unscrews the adjuster to lengthen the cable. This is a critical step to ensure the cable has the proper amount of play in it. If you have the cable too tight, the clutch will not engage fully, resulting in slippage and excessive wear.



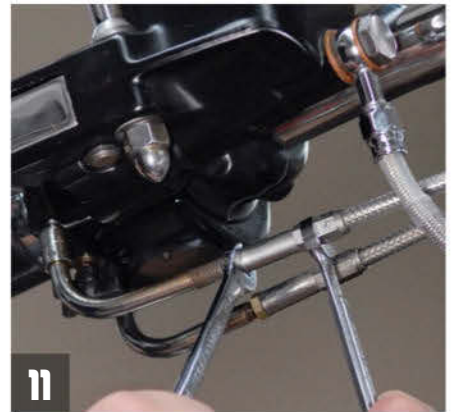
8 You know you have the cable properly adjusted when you have between 1/16"-1/8" space between the cable's ferrule and the hand control bracket. This is the proper measurement when the clutch lever is engaged and fully away from the handlebars.



9 To adjust and lubricate the throttle cables you will need to remove the upper-hand control housing. There are two T-25 Torx screws (one bottom and one top) that secure the housing; remove them before gently moving the housing aside.



10 With the needle applicator of the Dri Slide it's easy to squirt lubricant into both the throttle cable and the idle cable. As you do this, work the throttle back and forth to make sure the entire cable gets lubricated. A few drops of lubricant where the throttle sits in the housing will also keep things moving smoothly.



11 With a pair of 5/16" wrenches Fred breaks loose the jam nut from the throttle cable. To adjust the cable, thread the adjuster in or out so that at wide-open throttle (WOT) the butterfly in the carb or throttle body is open all the way. For stock H-D cables you will need a pair of 3/8" wrenches. H-D adjusters will also be protected by a pair of rubber boots you will need to remove before adjusting the cables.



12 With the air cleaner removed this is what the butterfly should look like at WOT. You should also check that the throttle cam stop is just contacting the stop plate on the carb or throttle body. When you adjust the throttle cables (throttle and idle) make sure that they operate freely with the handlebars turned full right and full left.



13 Next, adjust the idle cable (return cable) in the same manner as the throttle cable. You want to be sure you have a small amount of free play in the throttle before it engages the cable. Reassemble the hand control housing by torquing the screws to 35-40 in-lbs.



14

The brake master cylinder's top cover should be wiped clean prior to removing it. This will keep dirt from contaminating the brake fluid. A pair of Phillips head screws secures the cover to the master cylinder.



15

Add brake fluid to ensure the master cylinder is filled to the proper level, 1/8" from the top. Make sure you use the correct type of brake fluid (Fred uses DOT 5 as per the service manual) from a new, unopened container (see Other Info You Should Know).



16

If your brakes feel mushy, bleeding them should help. With the master cylinder full and the brake lever squeezed towards the bars, loosen the bleeder fitting at the top of the caliper with a 3/8" wrench and let some fluid flow out. Now tighten the bleeder screw before releasing the brake lever. Let the lever go and repeat the procedure until no air bubbles are visible at the bleeder. Keep the master cylinder full of brake fluid while performing this procedure. **AIG**

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The Next Best Thing

Dane couldn't get a 45/45 flattie, so he modified a Night Train

NO TRUER OR WISER WORDS HAVE EVER BEEN uttered in the English language that best encapsulate all there is to know about life than “You can’t always get what you want.” Whether or not this Rolling Stones classic correlates to the build of this 2008 Night Train will, unfortunately, have to remain a mystery. What we do know, however, is that owner/builder Dane Trask is all too familiar with its message because life is a fickle &!^\$%.

Like most Harley enthusiasts, Dane Trask (no relation to Trask Performance) wants as many Harley motors in his barn as possible, and that includes a 1945 45" flathead. However, the possibility of him ever owning a 45/45 can't be anything more than a fleeting dream, not because they're rare and expensive, but because of the inexplicable horrors that would ensue if he ever swung a leg over one. “I’m just afraid I’d kill it if I tried to ride it!” Dane exclaims. “I would look like a monster sitting on a tricycle.” See, Dane is 6'2" and weighs 240 pounds. So even though he couldn't get what he initially wanted, Dane ended up creating the next best thing. “But if you try sometimes, you just might find/you get what you need.”

And what Dane needed was a platform that could never act as damning evidence during a trial, capable of convicting him of first-degree murder (or comparing him to Godzilla). So he fused together the attainable elements (old school, bobber, minimalist) of his unachievable dream with another crucial variable: “a big V-twin with a big back end.” A Softail Night Train just so happens to be the perfect medium. “The bigger rear tire was the deciding factor,” he states. “I liked the rigid look but with the comfort of the swingarm.”

Seeing as Dane was drawn in by that 200mm tire, the first mods were made to embellish it. He first installed fat 16" spoke wheels with black powdercoated rims from a Cross Bones, a find that Dane referred to as an alignment of the stars. “It just makes the tire look massive.” As for accentuating the other aesthetics (hardtail appeal and comfortable swingarm), Dane first had to deal with the rear fender since it looked as though it were “floating in space.” Dane found out that he could fab a thin sheet of metal into a sleeve-like shape

and install it on the swingarm and then direct the sissybar through the sleeve, creating a sissybar that goes down from the removable struts on the rear fender through and past the sleeve on the swingarm. Now, when the swingarm goes up and down during a ride, the sissybar goes up and down with it. However, it looks as though it's not moving at all, creating the hardtail façade.

Emulating the minimalist look of the 45/45 also required some effort. After trying a Fat Boy seat, Dane purchased a saddle from yet another Cross Bones. However, that new seat was too high,





so Dane fabbed a front mount out of 1/8" sprung stock and built a new set of posts, which he flushed with the frame for the springs to sit in. This dropped the seat by 2-1/2". Dane continued exploiting the laws of gravity by swapping out the stock telescopic forks with an old-school 2"-under springer front end ("I like the mechanical look and the way it bounces in front of me") and then went 2" farther with a bolt-on kit.

Dane stayed with the "keep it simple, stupid" theme by removing the tank console ("it looked too tall"). And then Dane decided to bundle together all of the electronics into one spot, an amalgamation that was made possible after checking out the internals of the speedo. After opening the speedo face, Dane realized there was tons of room inside, more specifically, towards the bottom. He began by using a

bur bit on his Dremel and made holes in the face so that once he installed the lights inside, they would shine through. Then he soldered the five LEDs for the indicators inside that roomy area. Next Dane constructed another thin sheet of metal, designing it so the speedo could slide through to fit inside. The bars to hold the speedo setup, however, were tapered down to 1", and his clamps were 1-1/4". To match them up, he cut the metal tube in half, welded the speedo bucket to it, and then clamped it around the handlebars. "The speedo cup is now welded to one half of the sleeve," Dane elaborates. "You just put the two sleeves around the tapered section of the bars and clamp it all together with the springer bar clamps."

Up until this point, you've probably been wondering where the clutch is, thinking "Where are all of the



switches?" and "How the hell does he ride it?" Well, he can ride it, and they're there, just hidden. Like most 1940s bikes, there isn't any extraneous wiring on Dane's Night Train, and Exile Cycles' GripAce, an internal throttle and internal clutch component, eliminates the wires and makes the minimalist look possible. Basically, the GripAce condenses all of the electronics and button pads on the handlebars into the grips. "You have your left turn signal, right turn signal, horn, and high/low buttons all in one place," Dane says, and pushing two of the buttons acts as the starter. All Dane had to do was install the throttle, which he custom-made by welding in 1" round stock (welded inside the hand-built Hollywood 1-1/4" bars). He also welded the GripAce's clutch setup underneath the tank (which involved rigging an old clutch cable to the horn bracket relocated in front of the engine).

Since Dane also wanted to build a bike similar to what "a returning serviceman coming back from World War II would ride," he initially fabbed a jockey shifter with a hand clutch by utilizing a WWII Mauser bayonet. Bad-freakin'-ass! So where did it go? "It was super sketchy," Dane recalls with a laugh. "I like to

ride, but I also like to live." In other words, Dane needs his bikes to be rideable. That's why he uses a 3/4"-bore rear master cylinder and integrated the front and rear brakes into the foot pedal. "I don't want to lose the ability to ride it every day just for the sake of style."

So with the bike complete, do you think this custom Night Train was a good tradeoff for the flatty? To me, personalizing a bike is always good ... but I still would have appreciated seeing what Godzilla would have looked like on a trike. **AIG**



INSTALL

By Tyler Greenblatt • Photos by Tricia Szulewski

Aero-dynamic

Klock Werks' FLARE windshield

RIDING HARLEY-DAVIDSON'S FAIRED TOURING models is one of the most comfortable and stress-free experiences one can have on two wheels. One of the only complaints owners have about the pre-RUSHMORE batwing baggers, however, is the wind buffeting that occurs at high-way speeds. The stock windshield is about as aerodynamic as a brick wall, which causes wind to come over the top and smack the rider right in the face. Repeatedly.

To alleviate this problem on our 2010 Ultra Limited, we upgraded to a Klock Werks 8-1/2" tinted FLARE windshield (#2310-0273/\$179.95). The first thing that comes to mind when people see a FLARE windshield is how cool it looks compared to the stock shield. What you're actually seeing is performance at work. The FLARE's accented "hips" on the side route air away from the rider while also creating downforce, which improves stability in the entire front end. The signature "flip" sends a stream of smooth air over the rider's helmet, removing turbulence (buffeting) from the equation.

FLARE windshields are also available for many different years and models (including Evolution and Project RUSHMORE bikes) in 3-1/2", 6-1/2", and 11-1/2" sizes. Color options from clear to opaque are available for each shield. It's highly recommended that the rider is able to comfortably see over all of

the sizes except for the 11-1/2". We've noticed a slight distortion in the flip part of our 8-1/2" shield, but keep in mind that it's designed for the rider to look over it. The installation is easy, and all the stock hardware is reused.



Remove the two inner fairing screws on each side.



Unscrew the windshield trim, remove the stock shield, and slide the Klock Werks FLARE in place. Secure it with the stock hardware.



The FLARE adds style and function to the Ultra. AIG

SOURCES

KLOCK WERKS
605/996-3700
KustomBaggers.com



Klock Werks FLARE windshields are available in various sizes and tints and install in minutes using stock hardware.

Brake Liner Notes

Installing Magnum Shielding BYO lines

TOOLS NEEDED

- 12mm wrench
- (2) 7/16" flare nut wrenches or benchvise
- 9/16" wrench
- 7/8" wrench
- T-20 Torx wrench
- Sidecutter (snips)
- Rags
- Sharp awl or #0 Phillips screwdriver

HOW APPROPRIATE IS IT THAT THE name of this product from Magnum Shielding is Build Your Own (BYO) brake line kit? I mean, this is a do-it-yourself book after all. I must admit, when I first heard about this product, I was a doubter. Back in the day, there were no products that allowed the end user to build his own high-pressure, stainless steel, braided hydraulic brake lines. It was just unheard of. I remember building many a fuel line for carbureted cars and bikes with AN ends, but that's a low-pressure application. Heck, we never even dared to build fuel-injection lines (more pressure than carb fuel lines, but not as high as brake line pressure). But with the times came better technology in fittings, and now, it's completely possible to

build high-pressure lines at home. And, I dare say, they look a heck of a lot better than lines with crimped ends.

We procured kits from Dennis Kirk and received bags of parts and coils of line (#1906800/\$123.99, #1906805/\$45.99, #1906803/\$45.99, and Tee Block #273288/\$23.99). A tip: unspool the line and let it sit out for awhile. The lines wanted to curl after being rolled up in the plastic bags for an extended amount of time. We ordered the blacked-out kit for installation on a 2007 Harley-Davidson VRSCDX



The Magnum BYO kit comes with bulk line and the appropriate style and quantity of ends (only several shown in this photo). We utilized the Magnum inline fitting adapter for the rear brake light switch.



1
The original rubber lines are nothing special to look at. And our hot V-Rod needed the upgrade.



2
We protect the wheel from splashing brake fluid with rags and remove the stock front lines.

V-Rod Night Rod Special. The banjo fitting is black too, but the ferule ends are nice-looking stainless steel. The lines are easy to cut and fabricate and allow the end user to come up with all sorts of custom-routing solutions. For example, we decided to go the performance-braking route on the front lines and run two separate lines from the master cylinder to each caliper. This requires an additional part: a double banjo bolt to secure the dual banjo fittings to the master (Russell #270811/\$15.99).



After removing the rear line from the V-Rod, we unscrew the brake light switch with a 7/8" wrench and save it to be reused later.



To begin assembly of the lines, first slide the stainless female fitting over the end of the bulk line.



Then, using sharp sidecutters, cut the line cleanly on one of the lines that's printed perpendicular to the line. The line cuts nicely with some force. No cutoff wheel is required. If the line looks flattened from cutting, you can reform the interior of the line with a sharp awl. We used a #0 Phillips screwdriver.

This product has won me over, and I don't think I'll want to buy premade lines ever again. I'll just order the bulk line and fitting and do it my own darn self.



Next, slide the male fitting onto the end of the line, making sure the line bottoms out. There are slots in the male fitting to show the depth achieved.



Slide the female fitting up to the male and start the threads a turn or two.



Insert the banjo barb (or, in this case, the brake switch adapter) into the line fully and thread it into the male fitting. The barb will still swivel at this juncture, so you can position the line end where you want.



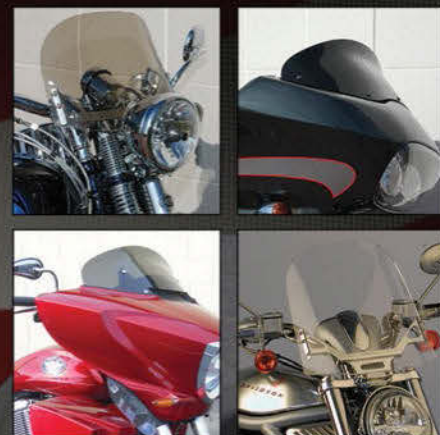
The Magnum kit comes with a plastic hex protector, but it didn't last long.

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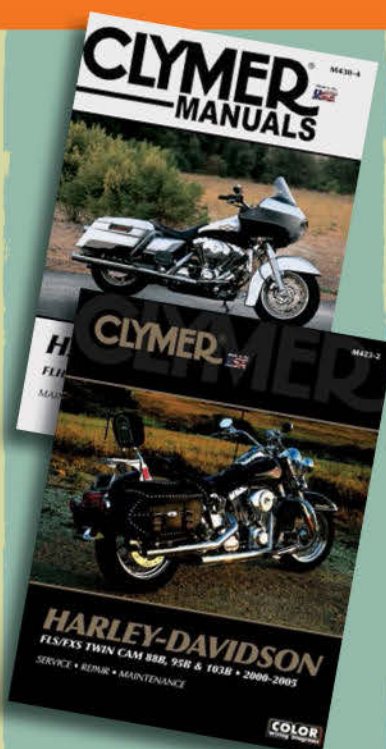
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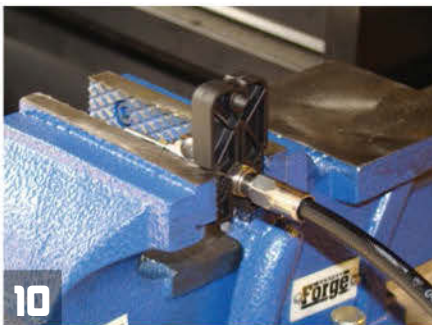
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10

You can tighten the female fitting to the male by using two 7/16" flare nut wrenches or using a vise with smooth flat jaws. Tighten the female fitting until the two hexes meet, plus one-half turn. End with the hexes lined up.



11

Next, we install the brake light switch and install the line on the bike. The chrome fitting is hidden from sight behind the V-Rod's aftermarket exhaust.



12

This illustrates the difference between the stock split-line system and the superior dual-line system we installed. A double banjo bolt was procured from Russell Performance to allow us to install a true dual-line system.



13

Because the new lines are quite stiff, we need to remove the master cylinder from the bike to get the banjo threads started. Then, once snug with a 9/16" wrench, we reinstall the master onto the handlebar.

TIPS & TRICKS

Don't forget to loosen the screw under the right switchgear to allow the front master cylinder to be removed from the handlebar.



14

We finish the installation of the dual front lines using the stock banjo bolts.



15

Now the V-Rod stops as good as it looks! **AIG**

SOURCES

DENNIS KIRK
800/969-7501
DennisKirk.com

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Bolt-On Fever

Diablo raises Doug from biker hell

A FEW YEARS BACK, DOUGLAS FITZGERALD WAS IN what can easily be construed as motorcycle hell, one that had the potential of spelling out the end of his riding days. After years of accumulating riding experience and climbing, step by step, the ritualistic displacement ladder — from a 1946/45" when he was 19 to a 1994 Sportster bobber called Bob to a 2005 Street Glide — Doug suddenly found himself slipping down and off this figurative ladder after an accident that required him to undergo shoulder surgery. Doug recalls this horrific time in 2012, "I couldn't ride my Street Glide anymore because I would drop it in my driveway. I just couldn't turn it. It was either buy a small bike or don't ride at all — and that wasn't an option for me."



With that knowledge, Doug's next course of action was laid out in front of him, well, if he was going to stay with Harleys. He was going to purchase a Sportster, since it was, at that time, the lowest end of the Harley spectrum. Well, for some Harley riders, being restricted to an Evo lower than 1340cc and not riding altogether are equivocal to a death sentence.



When Doug walked into his Harley-Davidson dealer for his second inaugural run in 2012, his initial trajectory was set on the Forty-Eight mostly because of its throwback design. But his beeline suddenly deviated. “And then I saw that 2012 Seventy-Two,” Doug remembers. “That Hard Candy Big Red Flake, that heavy metallic paint. That’s what appealed to me. And it had that old-school look like the Forty-Eight. I walked out of the dealership 15 minutes later with that bike.”

For Doug, the bike he chose, now displayed on the pages before you, ended up becoming his time machine, allowing

him to go back to the beginning and do everything better. See, since inaugurations into the two-wheeled realm are usually smaller-displacement bikes like a Sportster, his Seventy-Two could therefore be defined as a return or a “second first,” and it just so happened to be Doug’s first stab at customizing. It’s even plausible that Doug would have remained in stock land if it weren’t for the accident, compensating for the loss of displacement by way of mods.

In fact, it would be the Seventy-Two’s stock Hard Candy custom paint that would affect the XL’s inexorable cycle of mods and, coincidentally, what Doug would call it. It didn’t



take long before Doug dubbed the bike *El Poco Rojo Diablo*, which is Spanish for The Little Red Devil. But there's more to the name than just the bike's color correlating to the devil's stereotypical shade of pigment. When first coming up with the concept of the Seventy-Two, Harley-Davidson was inspired by a style of motorcycles indigenous to the area around California State Route 72. In the pursuit thereof, Doug emulated The Motor Company's initial creation of that particular bike, not just by mimicking its aesthetics ("I wanted that Mexican low rider theme") but by adopting the language from that area, which explains the Spanish. "It just wasn't cool enough stock," says Doug. "I got a little carried away, though."

Not only was the bike's looks lacking, but Doug had something he wanted to prove, which would later evolve into his own building philosophy. "I want everybody to know that a guy can make a cool Harley-Davidson himself without going to a custom guy and paying \$60-, \$70-, \$80-, or a \$100,000 for his motorcycle," Doug reveals. And he accomplished this by incorporating mostly bolt-ons parts!

After being thrown deep into the bowels of hell, rather than cringing from the inexhaustible heat and succumbing to eternal despair, the flames licking his bike became Doug's tools. And, luckily, Doug had some help from souls beyond the land of the damned, Duncan Rourke from Steve Drane Harley-Davidson (SDHD). As Doug says, "It was basically a buy and bolt-on build" with Duncan supplying the parts and taking on everything beyond the bolt-on realm, which includes the steel-braided cables. The leatherwork was done by Barry Dale from Freakshow Choppers who also re-covered the Harley seat, did the pillion, and made the tool roll bag, which matches the Leatherworks side bags. "I would have a bunch of ideas, and Duncan helped me out with developing the bike," Doug says.

When he first described the style of the SoCo/Mexican stylistic trends to me, Doug noted that the bikes in Southern Cali usually have twisted spokes. That's why he went with Ridewright's Twista 50-spoke hoops, which, incidentally, weren't made for Sportsters. Luckily, Ridewright customized the wheels to fit the Seventy-Two, and now they measure 2.15-21" front and 3.50-16" rear. "They look so cool," remarks Doug. They're even cooler now, thanks to the Dunlop white-wall MH90-21" and 150/80-B16" wrapped around them.

Before the rims, Doug first went the "rumble-enhancing" route. "I did the Screamin' Eagle Stage 1 air cleaner and Vance & Hines Short Shots right away," says Doug. But, as you can see, the pipes on this Sporty ain't short. He had to get rid of them because they didn't match the mods he did later. After accentuating the Seventy-Two's stock apes (aping them higher from 12" to 15" with Drag Specialties' Narrow Cen-

ter apes and then again with a 1" riser) and after bolting on the quick-position Harley-Davidson/CycleVisions Multitude sissybar (embellished with a devil's head) and the rear pillion seat, the Long Shots looked weird. "It needed a longer exhaust, so I got Vance & Hines' 2-into-2 Straightshots." With all of these engine goodies, the Seventy-Two is now essentially an Eighty-Nine or, at least, an Eighty-Six: it puts out 86 hp and 89 ft-lbs. of torque at 4500 rpm, dyno'd at SDHD with a Harley-Davidson Pro Super Tuner installation.

Like the pipes, Doug started with square Harley-Davidson Live To Ride covers in gold. However, after bolting on the Live To Ride round mirrors, there was an obvious problem. To keep the bike immaculate, Doug replaced the square (boring) covers with Harley's round, chrome ones, which, serendipitously, are emblazoned with flames. He then enhanced these replacement add-ons by bolting on a bunch of Harley-Davidson chrome accents along with Harley's Silencer shifter pegs and handgrips.

More bolting later ensued with a Küryakyn taillight, Harley speedo/tach combo, and Harley fork legs armed with Progressive springs (and a full, polished Harley rotor), which complement the new Progressive 412 11" shocks in the rear.

And with just bolt-on parts (in addition to bringing a devil mask), Doug and his Diablo have gone to various bike shows and have won 26 trophies, including best overall at the 2014 Ladysmith Day Festival's Car Show! It's probably due to this success that Doug plans to attempt more custom builds in the future. What's more, at 50 years old, Doug is a cancer survivor and has been cancer-free for one year since May! "If an average guy can buy a stock Harley, customize it, and beat \$100,000 bikes, then anyone can make a cool Harley," he says.

Jeez, time to get away from the keyboard and get into the garage! **AIG**

By Tricia Szulewski

Spring Fling

Installing a Harley-Davidson solo spring saddle



TOOLS NEEDED

- Phillips screwdriver
- T-40 Torx bit
- 5/16" Allen wrench
- (2) 1/2" wrenches
- 5/32" Allen socket
- 1/4" Allen socket
- Ratchet
- Torque wrench (in-lbs. and ft-lbs.)
- Mixture of isopropyl alcohol and distilled water

ENHANCING THE LOOK OF HARLEY'S Sportster Forty-Eight, The Motor Company's solo spring saddle (#54373-10/\$299.95) and spring saddle installation kit (#54074-10A/\$229.95) require just a few tools and a couple hours to complete. The bobber-esque seat is available in two-tone black or distressed brown leather and showcases two exposed springs and a curved seat that offers long-haul comfort. The seat can also be mounted with the company's rigid mount installation kit, but we like the nostalgic look of the springs. The kit comes with a leather panel that covers up the under-seat area, but it leaves some

gaps, so you may want to come up with creative ways to resolve it. For this installation, we followed the instructions to a T.



SOURCES

**GENUINE HARLEY-DAVIDSON
MOTORCYCLE PARTS
& ACCESSORIES**
H-D.com

The solo spring saddle can be installed with a rigid mount installation kit or the spring kit shown here.



Remove the stock Phillips head screw behind the stock seat. Push it forward to release the seat slot from the frame post and remove the seat.



Use a T-40 Torx bit to remove the seat post. Reaching under the fender, hold the screw while removing the seat post. Remove the washer and screw, but save them for later.



3
Clean the area where the seat was with a mixture of half isopropyl alcohol and half distilled water and allow it to dry completely.



4
Remove the backing from the hook-and-loop fastener under the frame cover and secure it to the frame.



5
Attach the frame cover with the hook-and-loop fastener.



6
Use a 5/16" Allen wrench to install each spring to the saddle mounting bracket using two of the 1/2" flat-head screws provided. Torque to 25-30 ft-lbs.



7
Use the stock screw and washer with a new flange nut and loosely install the spring seat mounting bracket with two 1/2" wrenches. Make sure the frame cover and mounting bracket are centered and tighten to 15-20 ft-lbs.



8
Use a 1/4" Allen socket and a 1/2" wrench to remove the stock rear fuel tank mounting screw, washers, nut, and thread protector. Save the washers.

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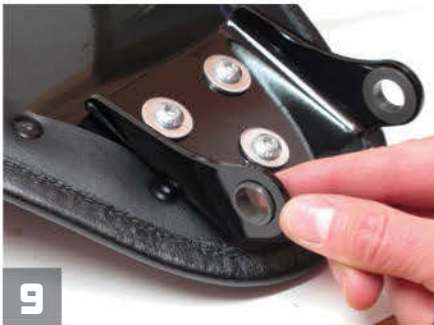
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9

Use a 5/32" Allen socket to attach the saddle pivot bracket to the saddle with the three washers and buttonhead screws. Torque to 48-72 in.-lbs. Install the plastic bushings to the pivot bracket from the inside.



10

Install a stock washer and sleeve spacer onto the long screw and insert the screw through the right side of the pivot bracket. Then install a black spacer onto the screw.



11

Place the pivot bracket over the rear tank mounting point. Slide the screw through the mounting point. Once it appears out the left side, install a black spacer on the screw and continue screwing it all the way through by hand.



12

Add a sleeve spacer, stock washer, and flange nut and tighten to 15-20 ft.-lbs. with a 1/2" wrench and 1/4" Allen socket. Finish by pushing the thread protector cap over the exposed threads.



13

Use a 5/16" Allen wrench to attach the screws through the springs to the saddle. Torque to 25-30 ft.-lbs.



14

The spring solo seat makes this bobber even cooler. AIG



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Behind The Scenes At Pingel

There's more to a fuel valve than you might think!

SOME MANUFACTURERS AND PRODUCTS BURST onto the motorcycling scene and then disappear nearly as quickly as they appeared. Yet there are other companies that remain at the top of the game, decade after decade. At some point, they become an institution in the two-wheeled industry, whose name is synonymous with the products it offers. Pingel is one such brand that has stayed true to its high-quality, family-owned, made-in-the-USA roots since 1967.

What started off as a custom motorcycle shop occupying a two-car garage in Palatine, Illinois, has grown into an international manufacturer based out of a 51,000 sq-ft. facility in Adams, Wisconsin. And Wayne and Donna Pingel still couldn't be anymore proud or passionate about their namesake company. I found this out firsthand when I went up to Adams to visit the massive machine shop and learn exactly how one of its most popular and well-known products, fuel valves, are made.

It's a simple enough component, but without gasoline, you're going nowhere fast, making your little fuel valve a very important part of your bike. But have you ever stopped to think about what goes into transforming that integral component from bare metal to a finished product? Have you ever looked at fuel valves online or in a catalog and sorted through the huge variety of options to get to the exact one you need? These are the things that we greasy-handed garage rats think about, and I couldn't wait to get up to the Pingel shop.

Pingel makes several families of fuel valves for everything from single-cylinder dirt bikes to four-cylinder Top Fuel drag-bikes. The main difference between each of the styles is the fuel-flow rate. For starters, a stock H-D fuel valve flows 28 ounces of gas per minute. Pingel's Power-Flo, which is its most popular street-performance valve, and the one we'll be talking about most, flows 90 ounces per minute in its standard, single outlet with reserve setup. The Guzzler, a super-high performance valve made for drag racing and massive-displacement street motors, flows 211 ounces per minute. Finally, the Pingel NV valve, made for Pro-Stock drag racing and higher, flows 1,152 ounces (9 gallons) per minute.

What's the advantage of having the ability to flow more

fuel? Most performance modifications you make to your Harley's engine are for the purpose of flowing more air into and out of the combustion chamber. In order to keep the air/fuel ratio at 14.7:1, you're going to have to increase fuel flow. In many cases, that simply means putting bigger jets in the carb. But even with minor modifications, your carb can still crave more



All the parts that go into a Pingel Power-Flo valve are laid out, ready to be put together.



Dave clears the inner valve tube to ensure it will flow the correct amount of fuel.

fuel at higher rpms. Of course, let's not forget that many readers of this magazine don't even have a stock fuel valve to start with. If you're throwing a custom tank onto your project, you'll have to choose from a variety of manufacturers and styles of fuel valves. So keep all this information in mind when it comes time to choosing the correct fuel valve for your build.

Let's examine the different sizes, styles, and positions of Pingel's Power-Flo fuel valves for stock and custom Harley-Davidsons. The Power-Flo is available in the standard H-D 22mm thread for mounting to a stock tank. Many aftermarket tanks run this size as well. However, you can also order the Power-Flo with inlet sizes of 1/4" NPT and 3/8" NPT. Power-Flo valves mostly utilize a standard 5/16" hose barb output that comes in single, dual, or triple versions. They come in Race and Reserve options, with the latter offering a Reserve position on the valve, and the former simply having On and Off positions.

Mounting locations vary between every aftermarket and stock gas tank. And bungs can be placed just about anywhere on custom builds. Taking this into account, Pingel offers three different lever and hose outlet positions for accessibility and flow direction. The 1000 Series has the control lever mounted on the

left side (looking down from the tank), 90 degrees away from the hose outlet. This works for forward, right-side placement and rearward, left-side placement. The 4000 Series is the opposite, with the control lever mounted on the right side, 90 degrees away from the hose outlet. This is for forward, left-side placement and rearward, right-side placement. On the 6000 Series, the control lever is located on the completely opposite side from the hose outlet. This is perfect for mid-mount positioning on either side of the gas tank but can also easily be used in any location.

Even though EFI has been available on Harleys for the last 20 years, that doesn't mean that it's necessarily a good thing. You want to turn that new Twin Cam Softail into a light, mean bobber? You can start by dumping the rat's nest of wiring found in every nook and cranny and easily switch to a carburetor. Also a likely scenario: you've found a killer deal on an Evo or early Twin Cam bagger, but quickly discover the pains involved with tuning and



3 Next, he test-fits the flow tube into the valve body to make sure the two components work together. He then takes it out.



4 Dave places both rubber seals inside the valve body.



5 A cap is placed onto the flow tube.



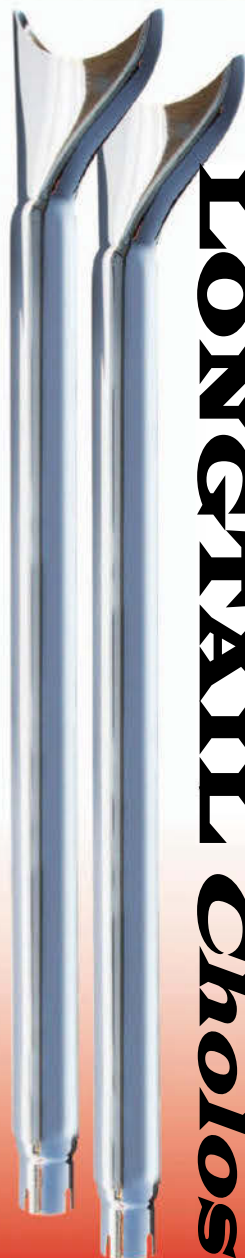
6 The parts are then pressed together, forming a tight seal.

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IN CALIFORNIA: in order to meet Air Resource Board emission requirements, certain aftermarket components have been identified as replacements. All other emission related aftermarket components are for competition/off-road use only. A list of replacement components and corresponding fitment is provided at www.samsonusa.com/california.



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Pingel tests every valve it makes to ensure there are no leaks and that it functions properly. After testing, each valve is cleaned and inspected for any damage that may have occurred during its manufacturing. Even the slightest scratch or finish imperfection will keep a fuel valve from getting shipped to a customer.



The control lever is pressed into the flow control tube.

would like to go to a simpler setup. Pingel makes adapter kits that easily bolt right into your bike's in-tank fuel pump (rendering it useless), allowing the attachment of any fuel valve to work with any carburetor you choose.

Now that you know how to choose the correct fuel valve for your Harley, it's time for the hard part, which is choosing a design. Pingel fuel valves go beyond the objectives of performance and longevity; they can add a style dimension to your project in an area that many riders give little thought to. The littlest of details can make or break a build, and Pingel sweats them all. The Power-Flo line of fuel valves comes in chrome, brass, polished aluminum, and black chrome to fit any style of build. Beyond that, a variety of fuel valve bodies based on a hex style and a round style allows builders to further set their rides apart.

Pingel's Chopper Valve is also worth mentioning as it solves many of the fueling issues associated with lifted-tank choppers and bobbers. It's a compact unit that features a ball-detent knob for



A stainless steel fuel filtering screen gets crimped on to complete the assembly.



Pingel packages its products in house.

On, Off, and Reserve locating. Just route two hoses from the fuel tank for On and Reserve and completely eliminate fuel starvation with custom tank mounting setups.

This article is by no means an exhaustive discussion of Pingel's many fuel valve offerings. In fact, we haven't even touched on the massive amount of other products Pingel makes that help our Harleys perform better and look cooler. The best ways to discover the entire line of Pingel's products are to pick up a catalog or visit Donna and Wayne at any of the major motorcycle events throughout the year. If you're planning on attending the 75th Sturgis Motorcycle Rally, stop by their downtown bar, Pingels Shifters Bar & Grill, to have a great time and check out Pingel's products firsthand.

One of the highlights of my trip to Pingel was being able to follow Dave, a Pingel tech, putting a Power-Flo fuel valve together from start to finish. **AIG**

SOURCES

PINGEL ENTERPRISE INC.
608/339-7999
PingelOnline.com

Tire Biter

Titan Bulldog wheel chock

IT'S GREAT TO USE A WHEEL chock to securely hold your bike upright while working on it (or while towing in the back of a truck). There are lots of wheel chocks out there; some have different features and benefits. It seems with each new one that hits the market, there are improvements. It's not a seen-one, seen-'em-all proposition.

Here we have the Titan Bulldog wheel chock (#WC-1500/\$239). Made of steel, it weighs in at a hefty 33 pounds. But the extra weight plus the four large rubberized feet help keep the Bulldog in place when rolling your bike up into the cradle.

The cool dual-action, spring-loaded chock cradle always returns to the entry position when not in use, an enhancement over other similar style chocks on the market. There's nothing more inconvenient than having to stop and dismount your bike just to reset the chock entry. Combine that feature with the squeezing action of the cradle sideplates and that makes for one smart chock. As you push the motorcycle wheel into the rocking cradle and up over-center, a cam action, combined with the aforementioned return spring, draw the sideplates toward each other. There's nothing to adjust or activate; it's ingenious. Once the wheel comes to a stop against the front V-plate, you can lock the cradle in place with a small metal latch; make this a mandatory action. To be on the safe side, it's a good idea to use some tie-down straps to secure the bike, especially if using the Bulldog in the back of a truck or on a trailer for transport.

Note that there are three cradle positions for different wheel sizes. The



Bulldog is adjustable to hold any front tire securely. It's quite easy to adjust the front tire V-plate fore and aft. It relocates with a sturdy hitchpin. Titan ships the Dog partially assembled in two boxes. Bolt the front post on, then bolt the cradle where desired for your motorcycle's tire diameter, and you're done. The Bulldog is available in black, blue, red, orange, or orange/black combo for you Harley lovers, and comes with a two-year warranty. With a 1,500-pound load rating, I don't think anyone will ever come close to stress testing the limits of this Dog.

Note: 2014 and newer Harley-Davidson Touring and CVO FLH models require the custom-profile cradle. **AIG**



SOURCES

TITAN LIFTS
888/90-TITAN
TitanLifts.com

INSTALL

By Tricia Szulewski

Cool It!

Jagg oil cooler kit

TOOLS NEEDED

- Oil filter wrench
- Phillips screwdriver
- Flathead screwdriver or 1/4" socket
- 7/8" socket
- 1" deep-well socket
- 5/16" Allen wrench
- 5/32" Allen wrench
- Hose cutter or sharp blade
- Blue Loctite
- Torque wrench (ft-lbs.)

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In normal riding conditions, our air-cooled V-twins will get enough air between the engine fins to keep it running well. But if you ride in stop-and-go commuter traffic or like to ride in parades, you run the risk of overheating your Harley's engine. Being able to lower the running temperature of your bike by adding an oil cooler is an easy fix, which you can install yourself at home.

Oil coolers have two ports: one that brings

hot oil in and another that delivers it back out after being directed through channels that provide extra surface area to dissipate heat. Jagg oil coolers feature an in-line turbulator that gently stirs the oil, which ensures that the oil is exposed to the entire internal surface area with the least amount of pressure loss. Its fin design contributes to the oil cooler's durability while offering the most effective design for the best cooling performance.

The Jagg offset oil filter adapter is used to access the oil supply for the installation of its oil cooler. The adapter features a built-in automatic thermostat to allow oil to bypass the oil cooler until the oil reaches operating temperature. At that point, the thermostat closes the adapter's bypass hole, sending hot, filtered oil to the oil cooler where it's cooled and sent back out to the engine.



A relatively new piece in the Jagg oil cooler kit is the anti-rotation device. This prevents the adapter from turning and compromising the gasket during oil filter changes.



With the bike on a lift, place an oil drain pan under the bike and remove the oil filter with an oil filter wrench. Clean the mounting surface with a rag.

Here you'll see how our friend Glen Helsley from Woodstock Harley-Davidson in Kingston, New York, installs Jagg's LowMount oil cooler (#750-2500/\$420) on our 2009 Dyna Fat Bob. Jagg's instruction sheet is very detailed and easy to follow, and the whole installation takes only about an hour to complete.



Using a 7/8" socket, replace the threaded oil filter stem with the one included in the Jagg kit.



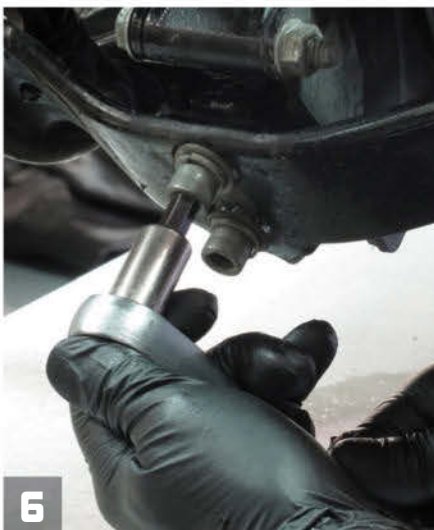
Using a 5/32" Allen wrench, loosen the five bolts on the Jagg oil filter adapter and dismantle it. The front half contains the hose fittings, and the gasket goes between the two halves.



Install the back half of the adapter onto the exposed oil filter stem threads with the rubber O-ring towards the oil filter housing. Loosely install the anti-rotation device as shown here and rotate the assembly counterclockwise until the anti-rotation device makes contact with the engine case. Tighten the included locknut using a 1" deep-well socket and then remove the anti-rotation device.



Place the anti-rotation device on the front half of the assembly using the black bolts. Put a dab of Blue Loctite on each of the five bolts and use a 5/32" Allen wrench to install it to the back half of the assembly, with the gasket properly placed between them. Use a crisscross pattern while tightening the bolts.



Use a 5/16" Allen wrench to loosen the two lower engine mounting bolts.



Insert the Jagg oil cooler tabs between the frame and the flat washer, then torque the engine mounting bolts to 21-27 ft-lbs.



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8 Insert the supplied hose into one of the oil cooler hose fittings. Route the hose up to one of the fittings on the adapter. Mark the hose where it will end up without buckling or bending. It's better to overestimate the hose length than to underestimate.



9 Use a hose cutter or a sharp blade to cut an even, straight cut at the desired location. Check to make sure there are no bends and that the hose won't collapse under heat load. Take off any extra length in order to achieve a gentle bend in the hose. Repeat steps 8 and 9 for the other hose and fittings.



10 Run two hose clamps down to the fitting on the oil cooler for each hose and hand-tighten them.



11 Attach the hoses to the fittings on the adapter and install the hose clamps as shown.



12 Tighten all four hose clamps with a 1/4" socket. If you don't have enough clearance for a socket, you can use a flathead screwdriver.



13 The last step is to install an oil filter. Turn it clockwise until it's hand-tight. Then, use an oil filter wrench to turn it another three-quarter turns.



14 The Jagg oil cooler looks like a stock part on the Dyna mounted on the frame like this. **AIG**

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JAGG OIL COOLERS
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855-RIDE-WHD
WoodstockHarley.com

WIDGETS

Compiled by Steven Wyman-Blackburn

Last Time On Garage ...

Did you miss the 2015 Spring issue of *American Iron Garage*? Well, even though it's no longer on newsstands, the magazine — featuring Road King, Evo Softail, rigid Dyna, and \$2,000 Sportster bike build custom stories, headlight, primary chain, Daymaker, Roland Sands Design Turbine air cleaner and 2-into-1 exhaust, Harley derby cover, Dynjet Power Commander V and Autotune installs, and more — can be found on GreaseRag.com while supplies last! \$6.99. Info: GreaseRag.com.



Primer School

PlastiKote specialty premium primers provide surface preparation for painting. Sandable Primer offers a base for topcoats that makes them look smoother and last longer. It provides strong adhesion and resists rust when applied to bare metal and works well under lacquer, enamel, or acrylic topcoats. Spot Filler and Primer quickly covers nicks and scratches, and is ideal to prepare metal surfaces with minor damage. Etching Primer chemically bonds to ferrous and nonferrous metals, etches, and primes in one coat and is sandable. Zinc Rich Primer is a cold, galvanizing primer that provides maximum rust prevention on bare metal. It also covers existing rust and can be used as a weld-through primer. Info: PlastiKote, 866/222-8714, PlastiKote.com.

Good On Ya

Goodson tools and supplies for engine builders has introduced new features for its analog valve spring tester. The new 5"-diameter, Ashcroft-quality analog pressure gauge features both metric and SAE scales and a 600-pound capacity with 10-pound increments. It handles springs up to 2" in diameter and 4-1/2" overall height. The press assembly is height adjustable in 1/2" increments while height is measureable in 1/16" increments. The ergonomic T-handle gives firm control and incorporates an over-center lock for positive locking in the fully depressed position. The tester weighs 19.65 pounds and is finished in a heavy-duty black wrinkle powdercoat. Info: Goodson, 800/533-8010, Goodson.com.



Harness The Power

NAMZ' new NHCX-CB14 CAN/Bus handlebar switch wiring harness makes it easier to fish through your handlebars. It is universal, features plug-n-play technology and replaces the stock harness, allowing for up to 18"-tall handlebars. No cutting, splicing, or extensions are needed. Info: NAMZ Custom Cycle Products, 877/277-NAMZ, NAMZ CustomCycleProducts.com.



Lock & Load

Channellock introduces a brand-new line of Xtra Slim Jaw adjustable wrenches. The line features two different wrench sizes that help the professional or serious DIYer get the job done. The 3/16" Xtra Slim Jaws are imprinted with standard and metric scales. The wrenches are balanced to avoid weak points while Code BLUE grips are designed for durability and comfort. Info: Channellock, Channellock.com.



Tire Tamer

Stop & Go Tubeless Puncture Pilot allows you to make a wheel repair to your tubeless tire and reinflate it on the spot. This kit includes the Pocket Tire Plugger with 15 rubber plugs and the compact air compressor. This all fits into a durable, zippered canvas bag that measures only 7" x 3" x 3-1/2" and weighs only 1.7 pounds. The 12-volt compressor unit with built-in gauge and LED light comes with a 66" power cord that fits Battery Tender connectors, 12" alligator extension clips and 36" extension lighter adapter, and a 4" tire valve hose with sports needle and inflatable adapter. \$64.95. Info: Stop & Go, 800/747-0238, StopNGo.com.



Cool Runnin'

AMSOIL introduces new Synthetic V-Twin transmission fluid and primary fluid for Harley-Davidsons. The transmission fluid protects against gear and bearing wear and helps eliminate loud gear noise, delivering smooth shifts and excellent wear protection as well as a quieter transmission. It's engineered with robust synthetic molecules that provide optimal film strength to protect against damage from shock loading. It resists viscosity loss due to shear and withstands extreme heat to promote transmission longevity. The primary fluid is formulated with a balanced additive system that provides consistent clutch performance and feel, helps riders easily find neutral, and promotes smooth acceleration in normal and severe service conditions for confident takeoffs without killing the engine. Info: AMSOIL, 800/777-8491, AMSOIL.com.

The Daily Grind

Makita has released a line of INOX grinding wheels that deliver improved material removal with less noise and vibration for improved efficiency and user experience. The wheels feature aggressive composition for faster material removal with a high-strength bonding agent for added durability and longer life. The 36-abrasive grit is engineered for efficient material removal (1/4" thick, 7/8" arbor hole) and the "N"-grade hardness is ideal for working with ferrous metals including stainless steel. The INOX grinding wheels are available in 4-1/2" (A-95956), 5" (A-95962), and 6" (A-95978). Info: Makita, 800/4-MAKITA, MakitaTools.com.



Charge Ahead

Weego introduces its Weego Jump Starter Battery+. A compact and portable jump starter, it eliminates the worry and fear of a dead battery. Weego is pocket-sized and capable of starting motorcycles as well as charging phones and other USB devices. A three-in-one USB charging cord, eight popular-brand laptop connectors, wall and car chargers, and a carrying case are included. Constructed with durable, high-quality components and long-lasting batteries, Weego features built-in circuitry protection, an auto-off feature, and jumper cables with both a fuse and diode to ensure user safety as well as protection for the unit. Weego jump starters offer up to 1,000 charging cycles (a full charge plus full discharge) and have an operating temperature from -4 F to 140 F. From \$99.99. Info: Weego, MyWeego.com.

Join The Turtle Club

The new Turtle Wax Smart Shield line contains six exterior automotive products that work in combination, essentially formulating a shield with each application. With every Smart Shield product used, interlocking polymers increase the level of shine and protection, maximizing each step. Motorcycle lovers can use any combination of Smart Shield products to add a lasting diamond brilliance to their bike's finish. Info: Turtle Wax, TurtleWax.com. **AIG**



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For The Last Time

TOM DUERR HAD QUITE THE JOB ON HIS HANDS when he decided to restore this 1936 Harley-Davidson VLH back to its original glory. Tom shared images of the project at various stages, including the original condition of this classic machine when he first found it in the summer of 1998. Tom tells us that he spotted the bike by accident while helping an old farmer named Albert pour a concrete slab in his barn.

"I was barely able to distinguish it among the miscellaneous rubble an old barn tends to collect over many decades and generations," Tom says. Being a friend of the farmer's son,

Tom found out that Albert, who was a US Navy Chief Petty Officer involved in six invasions during World War II, bought the VLH after his discharge, and was therefore unlikely to give it up. Tom left it at that, probably thinking that was the last time he'd ever see the VLH again. However, when Albert passed away in 2003, Albert's son ended up contacting Tom in hopes that he would restore it, saying "Mom said she'd like to maybe see it go down the road one more time." He didn't have to ask twice. The build started with some

major cleaning, and from Tom's description, there were apparently some Disney characters on it. "After the trailer ride home and a good shot with the power washer, the Snow White and the Seven Dwarves decals scattered over her fenders and tank were more noticeable. Unfortunately, they didn't fit into my scheme for its restoration." Throughout the building process, Tom went to several swap meets in Ohio, Pennsylvania, and Iowa, and shared that he got some help from a VLH expert in the UK. "Folks were more inter-

Before



After

ested in helping me get it back on the road than making big bucks," Tom states. Once the bike was up and running, Tom decided to show it to Albert's widow. Tom reveals that when he did, she thought he was scamming her with another bike. But her attitude changed when she reached the tail end of the bike. "She saw the rusty, old 1948 license plate and said 'That was the year we were married,' and smiled."

TOM DUERR

Ohio

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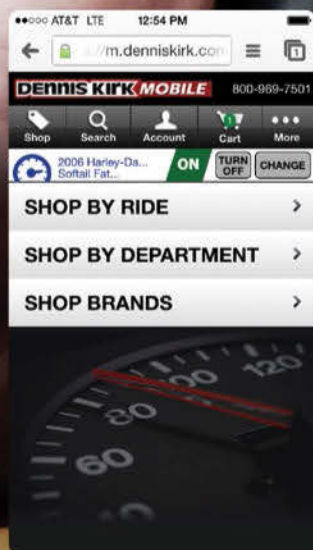
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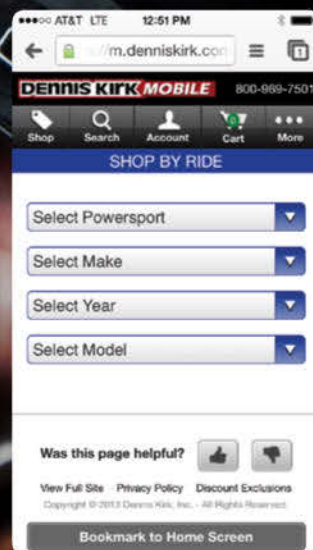
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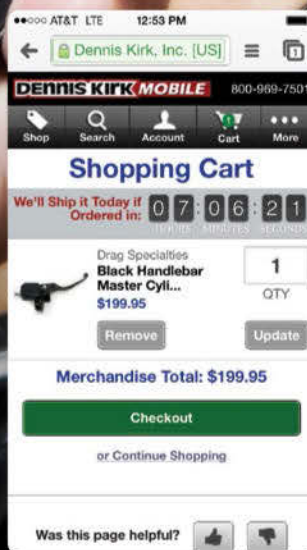
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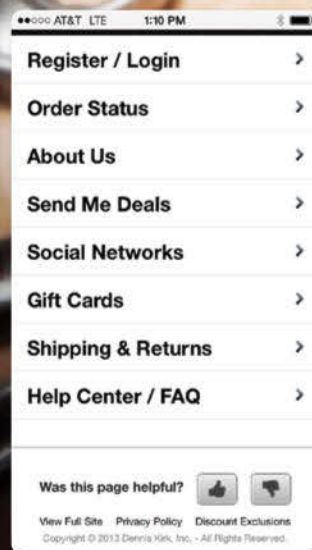
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